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DOI: 10.4103/jehp.jehp_1681_23

# Comparison of body image and peer relations among girls with normal, early, and late menarche

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## Abstract:

**BACKGROUND:** The onset of menstruation is a turning point in women's sexual maturity that, unlike other stages of growth, occurs abruptly and is a critical stage in girls' lives. The present study investigated body image and peer relations among girls with early, late, and normal menarche.

**MATERIALS AND METHODS:** This casual-comparative descriptive study included female students aged 9–17 in Isfahan. The participants were selected using multistage cluster random sampling. Out of 5,984 students, 56, 37, and 43 were selected for the normal, early, and late menarche groups. The Body Image Concern Inventory and Index of Peer Relations were the two tools used in this study. Moreover, the data were analyzed using a covariance statistical test.

**RESULTS:** Girls with early menarche had better peer relations than those with late menarche ( $P = 0.01$ ). In addition, there was a significant difference between adolescents with normal and late menarche in terms of body image ( $P = 0.01$ ). Girls who experienced late menarche were more concerned about their body image and appearance; however, girls with early menarche experienced more impaired performance ( $P = 0.05$ ).

**CONCLUSION:** The first menstrual cycle, or menarche, affects psychological variables such as body image and peer relations. The later the menarche, the fewer problems in regard to body image and peer relations.

## Keywords:

Body image, early menarche, girls, late menarche, peer relations

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Received: 19-10-2023

Accepted: 25-11-2023

Published: 28-03-2024

## Introduction

Adolescence is a transitional stage of growth and development, the most crucial and valuable period in life that begins with the onset of puberty.<sup>[1]</sup> It is a sensitive development period characterized by simultaneous hormonal, cognitive, and physical changes.<sup>[2,3]</sup> Menarche is a turning point in females' sexual maturity,<sup>[4]</sup> which begins abruptly, unlike other gradual stages of growth and development.<sup>[5,6]</sup> Menarche is perceived differently across cultures; however, it always remains a significant event that profoundly impacts girls' lives.<sup>[5]</sup> Sexual maturity in girls begins at ages 10–13

and is accompanied by menarche.<sup>[7]</sup> The first menstrual cycle, or menarche, is a significant milestone owing to emotional growth when young girls grapple with their self-image, identity, peer pressure, mood swings, family complexities, and even depression.<sup>[8]</sup> Physical, mental, and social aspects of menstruation cannot be easily divided since they are intertwined like a chain, each impacting the other. In light of what was mentioned, even many menstrual disorders derive from psychological and social factors.<sup>[7]</sup> The timing of menarche varies among girls, as some experience it earlier or later than their peers.<sup>[5]</sup> In studies, early and late menarche have been regarded based on two standard deviations from

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**How to cite this article:** Irannezhad E, Fooladvand M, Soltanizadeh M. Comparison of body image and peer relations among girls with normal, early, and late menarche. *J Edu Health Promot* 2024;13:115.

society's mean.<sup>[9]</sup> According to a meta-analysis, the mean age of the first menstrual cycle was reported to be 12.81 in Iran<sup>[10]</sup> and 12.56 in Isfahan.<sup>[11]</sup>

Puberty is a time of significant changes that can affect the psychological components of adolescents, including body image. Physical changes associated with puberty could change perceptions of body image, a powerful factor in one's behavior. Body dissatisfaction can cause depression and anxiety, resulting in lower self-esteem and mental health issues. During menstruation, girls feel disconnected from their bodies.<sup>[9]</sup> Being ashamed of one's body and hormonal changes during menstruation may cause an emotional disturbance that exposes girls to the risk of body dissatisfaction through cognitive distortions.<sup>[12]</sup> A negative attitude toward menstruation leads to lower body satisfaction and appreciation.<sup>[13]</sup> So many adolescent girls have expressed dissatisfaction with their bodies, which is accompanied by emotional turmoil, excessive concerns regarding their appearance, and unnecessary cosmetic surgeries. Body dissatisfaction bares the risk of eating disorders and depression. Social support and interpersonal relationships positively affect the mentioned dissatisfaction.<sup>[12]</sup> Girls with late menarche are concerned about their physical health, which leads to anxiety and distress.<sup>[13]</sup>

Human beings are social; however, social life can cause problems; that is to say, there is a relationship between menstruation and peer relations.<sup>[14]</sup> It is common among adolescents to have friends who share similarities and interests. Adolescents' natural tendency to be in a group comes with social liberation. Psychologists believe that peer support involves a system of helping as well as receiving one, group responsibility, mutual agreement about friendship, empathy, and assistance. Forming peer groups allows adolescents to have a standard to measure performance and create some social support. Peer groups enable adolescents to assess their relationships, behaviors, perceptions, and values to help them understand that they do not have to deal with social problems independently.<sup>[15]</sup> How girls perceive their growth and puberty depends on their peers. Adolescents generally keep their distance from others during menstruation, especially if they have had a unique menstrual experience.<sup>[9]</sup> Girls who experienced early or late menarche may remain distant from their peers.<sup>[16]</sup> Girls with early menarche have low self-confidence,<sup>[9,13]</sup> leading to social isolation.<sup>[5]</sup> In fact, they are not prepared for menstruation; therefore, they cannot communicate with their peers and receive the social support they need owing to early puberty. As a result, it leads to a negative attitude toward menstruation, such as physical and mental problems and shame.<sup>[16]</sup>

Moreover, girls with late menarche feel different from their peers and, therefore, suffer from a great deal of

internal and external challenges that are observed in groups with early menarche.<sup>[13]</sup> On the other hand, girls with late menarche have learned about menstruation from their peers' experience and, therefore, have positive attitudes and feelings toward the menstrual cycle; in fact, they are the only group who have a positive attitude toward menstruation and expect puberty so that they can experience what their peers are experiencing. In this group, social isolation from peers would resolve with the onset of menarche, which brings them joy and pride.<sup>[17]</sup>

The onset of menstruation comes with simultaneous psychological, cognitive, and physical changes, resulting in tension and anxiety in families, as well as creating issues regarding family members' relationships. Understanding the psychological effects of menstruation leads to providing better education and conditions for adolescents to grow, especially those with early and late menarche. This leads to a better understanding and attitude regarding menstruation, resulting in a peaceful home and a healthy society. For that reason, it is essential to conduct more studies with regard to this area. Accordingly, the present research aimed to investigate "body image" and "peer relations" among three groups of girls with early, late, and normal menarche since peer relations can be a significant variable at this age for adolescents.

## Materials and Methods

### Study design and setting

The present study was a casual-comparative descriptive design conducted in Isfahan.

### Study participants and sampling

The present research consisted of female students aged 9–17 in Isfahan. The population was selected from districts 1 and 3 of the Isfahan Education and Training Department. The age range for normal, early, and late menarche was considered 11–13, under 10.5, and above 14.5, respectively, given that the mean age of menarche in Isfahan was 12.65 (SD = 1.15).<sup>[8]</sup> Moreover, some other factors were taken into consideration to define the right age range for all the three groups: the age of late menarche is a quarter above the age of onset of menstruation range, and it is considered to be two standard deviations and, in some resources, approximately one standard deviation<sup>[4]</sup> higher than the average age of onset of menstruation in the society.<sup>[15]</sup>

The consent of students' parents was required for participation. The exclusion criteria were as follows: incomplete questionnaire, the presence of any illness or disability, or severe psychological disorders. It is worth mentioning that a brief individual interview was conducted with the participants prior to that to ensure they all met the inclusion criteria.

In the present study, three groups had to be selected using the representative sampling method, considered one of the study's limitations. The first group consisted of girls with early menarche, under 10, equivalent to the third and fourth grades of elementary school. The samples of the first group were selected with the help of their teachers owing to the sensitivity of the school authorities and parents in regard to the research topic. Therefore, the researcher was not able to directly raise the issue and question children regarding whether they have their menstruation started or not. In addition to that, not so many girls menstruate at this early age, and they must have experienced at least a few menstrual cycles in order to determine its psychological effects. In cases where the teacher introduced the student, parents' approval was received by the school authorities to ensure we have parents' permission. The students were called to the school on the next visit to answer the questionnaires. Alternatively, in periodic meetings, mothers were informed about menstruation, and then they were asked to communicate with us in case their child has started menstruating and answer the questionnaire. Thirty-seven girls with early menarche were found among 2,892 students of 61 elementary schools in districts 1 and 3 of the Isfahan Education and Training Department using the mentioned sampling method.

The second group with normal menarche around the age of 12, equivalent to seventh grade, was selected randomly. Since there were so many cases who had reached menstruation at this age, first, a couple of junior high schools were randomly selected from the two mentioned districts, and then 10 classes were selected. All the students of these 10 classes were given a questionnaire. The questionnaire questions were as follows: Have you had your first menstrual cycle? At what age did you get your first menstrual period? After collecting the questionnaires, only 114 individuals met the inclusion criteria among 196 cases who had completed the questionnaire. Incomplete cases, those who had not yet had their first menstruation started and those who had their menstruation started less than four months were excluded from the study. Finally, 56 participants were selected randomly out of 114 students who had met the inclusion criteria.

The third group consisted of girls with late menarche above the age of 15 who were selected among senior high school students. Since few students at this age had not yet had their first menstrual cycle, we had to select them in a certain way because school authorities were against direct questioning. That is why a short questionnaire was designed with seven questions, including name, age, willingness to participate, and last but not least, whether they had their first menstruation. All the 783 students who completed the questionnaire confirmed

that they had their first menstruation. Therefore, the investigation and research continued in the ninth grade with the purpose of finding samples who had not yet had their first menstruation. Finally, 43 students with late menarche who met the criteria were reached to complete the questionnaires.

### Data collection tool and technique

The Body Image Concern Inventory (BICI) is a 19-item self-report measure designed to assess two subscales of individuals' dissatisfaction and concern about their appearance. The first factor represents dissatisfaction, embarrassment, and obsession with perceived appearance flaws, while the second factor reflects the impact of its concern on individuals' social performance. Littleton *et al.*<sup>[18]</sup> reported Cronbach's alpha coefficients of 0.93, 0.92, and 0.76, respectively, for the total questions, the first and second factors. Bassak Nejad and Ghafari reported a validity of 95% for BICI based on the internal consistency by Cronbach's alpha.<sup>[19]</sup> In another study conducted in Iran, the reliability was calculated as 0.66 and 0.84, respectively, using split-half and internal consistency methods.<sup>[20]</sup> The present study employed a 5-point Likert scale, scoring from 1 (never) to 5 (always). Scoring ranges from 19 to 95, which derives from the sum of all the questions. Scores ranging from 19 to 38 indicate low concern about body image, while scores higher than 57 indicate high concern regarding body image.

Index of Peer Relations (IPR), developed by Hudson in 1997, is a 25-item scale to measure the quality of peer relations. Indeed, it measures the degree, severity, or magnitude of a problem that the participant is dealing with their peers.<sup>[21]</sup> The scale has two cutting scores. The first one is a score of 30, and participants who score below 30 ( $\pm 5$ ) are presumed to be free of any clinically significant problems. Participants who score above 30 could be presumed to have a significant clinical problem. The second cutting score is 70, and participants who receive scores this high or higher are considered to deal with severe problems, and violent confrontation with problems is probable.

The IPR uses a 7-point Likert scale and also a single-scale questionnaire ranging from 1 "none of the time" to 7 "all of the time" with an alpha coefficient of 0.94, implying excellent consistency and a standard error of 0.44. Each item offers seven options, including none of the time (1), very rarely (2), a little of the time (3), some of the time (4), a good part of the time (5), most of the time (6), and all of the time (7). Kimiaee *et al.*<sup>[22]</sup> reported its validity as 0.86. In another study, the researcher reported the reliability of this scale to be 0.91. Questions 1, 4, 7, 8, 11, 12, 15–18, 21, and 22 are scored reversely. Finally, the score of this scale ranges from 25 to 125.

### Ethical considerations

The present study was approved under the ethics code of IR.PNU.REC.1398.147 by the Ethics Committee of Payam Noor University. Students and their parents' consent was also taken into account and addressed.

### Data analysis

Descriptive and inferential methods were applied in the present study. The descriptive method included frequency, percentage, mean, and standard deviation, while multivariate covariance analysis was employed for the inferential method to analyze the data. The analysis was performed using SPSS software version 25 at a significant level of 99%.

## Result

The mean age of girls with normal menarche was 12 years and three months ( $SD = 0.44$ ), and the youngest and the oldest were 11 years old and 10 months and 13 years old and three months, respectively. Moreover, the mean age of girls with late menarche was 14 years and three months ( $SD = 0.41$ ), with the youngest aged 14 years and the oldest aged 15 years and four months. Finally, the mean age of girls with early menarche was nine years and seven months ( $SD = 0.51$ ), with the youngest aged nine years and four months and the oldest aged 11 years and two months. The mean age of menarche was 10 years and four months ( $SD = 1.46$ ). In addition, the average age of mothers ( $SD = 6.26$ ) and fathers ( $SD = 7.27$ ) were 38 and 43, respectively. The education levels of the participants' mothers were as follows: 53.6% diploma, 7.4% associate's degree, 32.4% bachelor's degree, 4.4% master's degree, and 2.2% Ph.D. Additionally, 51.5% of fathers had an education level of diploma, 10.3% had an associate's degree, 29.4% had a bachelor's degree, 7.4% had a master's degree, and ultimately 1.5% had a Ph.D.

In general, 0.7% of the participants' mothers were deceased, 29.4% were employees, and the rest were housewives. While 2.2% of the participants' fathers were deceased, 32.3% were employees, 11% were blue-collar workers, 39.7% were self-employed, 4.4% were drivers, 3.7% were retired, and 6.6% were in the medical field.

Regarding social status, 5.1% of the participants were categorized in the lower economic class, 75.7% in the middle class, and 19.1% in the upper class.

There is a significant difference among girls with early, late, and normal menarche concerning how they perceive their body image.

Table 1 shows the mean and standard deviation of variables by groups and the effect and significance of the covariance test after controlling the demographic

variables. The mean score of the variable "concerns regarding appearance" and "impaired performance" among adolescent girls in the three groups of normal, early, and late menarche is demonstrated in Table 1. The mean score of "concerns regarding appearance" among the three groups was 26.714, 23.838, and 30.349, respectively. Moreover, Table 1 shows the mean score of "impaired performance" among the three groups of girls with normal, early, and menarche as 11.250, 9.460, and 8.884. The mean score of the variable "peer relations" for the first group with normal menarche was calculated as 65.054, 77.486 for the early menarche group, and 55.651 for the participants with late menarche.

Table 2 demonstrates that there was a significant difference between the mean score of the girls with early menarche and those with normal menarche in terms of the variable "impaired performance" ( $P < 0.05$ ). However, there was no significant difference between the early and late menarche groups. The difference between the mean scores of groups with normal and late menarche was significant in terms of "concerns regarding appearance" and "impaired performance" ( $P < 0.01$ ). There is a significant difference among girls with early, late, and normal menarche in terms of their peer relations.

Table 3 shows a significant difference among the three groups in terms of peer relations ( $P < 0.05$ ).

Table 4 shows that there was a significant difference between the mean score of the early and normal menarche groups ( $P < 0.05$ ), as well as early and late menarche groups ( $P < 0.01$ ) in terms of peer relations. No significant difference was seen between the mean scores of the early and late menarche groups.

## Discussion

The present study aimed to investigate the effects of early, late, and normal menarche on "body image" and "peer relations" variables. According to the research hypothesis, a significant difference exists among girls with early, late, and normal menarche concerning how they perceive their body image. Girls with normal menarche are more dissatisfied with their bodies than those with late menarche. Therefore, they spend more time on their appearance, attempting to cover their so-called physical flaws, and feel even less attractive (concerns regarding appearance) ( $P < 0.01$ ).

Girls with normal menarche have this feeling of being judged by others as if people have negative opinions about their appearance; they are also afraid of being discovered for their physical flaws, resulting in a lack of social participation (impaired performance) ( $P < 0.01$ ).



**Table 1: Mean, standard deviation of the body image variable and its components, and the results of covariance test**

Variables	Normal menarche		Early menarche		Late menarche		Effect (F)	Sig (P)
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation		
Body image	26.714	10.052	23.838	6.135	30.349	10.376	4.134	0.018
Concerns regarding appearance	11.250	5.398	9.460	3.412	8.884	2.839	3.899	0.023
Impaired performance	37.964	14.519	33.297	7.859	39.348	10.376	4.733	0.010
Total								

**Table 2: Pairwise comparison of the mean scores of the body image variables among three groups (LSD)**

Variables	Groups	Mean differences	SD	Sig.
Body image	Early-normal	-4.667	2.488	0.063
	Early-late	2.948	2.633	0.265
	Normal-late	7.615**	2.381	0.002
Concerns regarding appearance	Early-normal	-2.876	1.809	0.114
	Early-normal	2.373	1.911	0.217
	Early-normal	5.249**	1.728	0.003
Performance disorder	Early-normal	-1.790*	0.892	0.047
	Early-normal	0.576	0.945	0.543
	Early-normal	2.366**	0.854	0.006

\*Statistically significant at the level of 95%. \*\*Statistically significant at the level of 99%. SD=Standard deviation

which is consistent with the findings of Lien *et al.*'s study;<sup>[17]</sup> however, the mentioned finding is not consistent with the study of Stice and Whitenton.<sup>[12]</sup> There was no significant difference between girls with normal and early menarche in terms of body image and the subscale of concern regarding appearance. It seems that both groups are dealing with similar concerns. They are worried that others will figure out, they have had their first menstruation and attempt to hide their physiological changes as a result of puberty. Additionally, they are concerned about their physical flaws. These concerns are more observed in girls with early menarche, which results in social withdrawal. As a result, the difference in the mean scores of the two groups in the subscale of impaired performance was significant due to concern about body dysmorphic ( $P < 0.05$ ).

There was also no significant difference between girls with early and late menarche in terms of body image and its two subscales which may be a result of different fears and concerns in the two groups. Those who are placed in the late menarche group are concerned about whether their body is functioning properly or not. This group is also comparing their body and appearance with their peers which makes them worry as well as dissatisfied regarding their appearance.

Girls with early menarche or the premature group are concerned about others finding out that they had their first menstrual cycle started. Both groups experience more anxiety than the normal group. According to the other research hypothesis, there is a significant difference among girls with early, late, and normal menarche

in terms of their peer relations. The results show that all three groups exceed the cutting score, which is an indication of challenges in terms of peer relations. There is a meaningful difference between the girls with early and late menarche concerning peer relations ( $P < 0.01$ ), which means girls who experience early menarche deal with more challenges with their peers (higher mean score). This finding is consistent with the research conducted by Sontag *et al.*<sup>[23]</sup> and Koff *et al.*<sup>[24]</sup> It appears that the group of girls with early menarche remains distant from peers more than girls with normal menarche since they feel the urge and need to hide it from others. They cannot share their menstruation experience with friends, which makes them feel lonelier ( $P < 0.05$ ). The girls with early and normal menarche confront different challenges than those with late menarche. Girls with late menarche are less respected by their peers due to their smaller appearance compared to their peers. It seems that the age of menarche affects psychological factors such as mental health, body image, and peer relations. The later the onset of menstruation, the fewer problems in mental health, body image, and peer relations. All three groups were mentally healthy, although those with late menarche had the least challenges. Regarding body image, all three groups were placed within the low concern range (scores between 19 and 39); however, girls with late menarche dealt with the least possible concerns. In terms of peer relations, all three groups had problems with their peers, although the earlier the menarche, the more problems with peers.

**Limitation and recommendation**

The present study had some limitations, like any other studies, regarding selecting participants who met the study's inclusion criteria. Owing to the limited number of girls with early and late menarche compared to the normal group, researchers had to investigate more schools in order to find the proper candidates. However, only a few schools were investigated to find participants who had experienced normal menarche; as a result, leading to some differences. Another limitation was due to the fact that 82 participants with normal menarche and three with late menarche refused to respond to the questionnaire, which may have affected the results of the study. Additionally, the stigmatized nature of menstruation and taboos concerning menstruation in girls' schools, even in high schools, made the investigation challenging. Therefore, the participants

**Table 3: Mean, standard deviation of the peer relations variable and its components, and the results of covariance test**

Variables	Normal menarche		Early menarche		Late menarche		Effect (F)	Sig (P)
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation		
Peer relations	65.054	24.885	77.486	28.999	55.651	30.074	4.686	0.011

**Table 4: Pairwise comparison of the mean scores of the peer relations variable among the three groups (LSD)**

Variables	Groups	Mean differences	SD	Sig
Peer relations	Early-normal	*12.433	5.876	0.036
	Early-late	**21.835	6.220	0.001
	Normal-late	9.402	5.624	0.097

\*Statistically significant at the level of 95%. \*\*Statistically significant at the level of 99%

may not have answered the questions honestly, including "Have you had your first menstrual cycle? In other words, some students have probably concealed that they had not had their menarche yet. In addition, teachers may not have noticed early menarche, or mothers refused to report it for various reasons.

It is suggested to provide girls with sexual education and menstruation around the age of eight. Parents also should be taught how to prevent early menarche by controlling their child's nutrition and weight. In addition, parents need to prepare their children at the right age and provide them with the necessary information and awareness in order to prevent the harm caused by children's ignorance and unawareness. Besides, if their child has not yet had her first menstruation started after the age of 14, they should discuss it with their children and assure them that the onset of menstruation is largely related to genetics and that there is no need to be worried.

## Conclusion

It appears that the onset of menstruation affects psychological components such as body image and peer relations. The later the menarche, the fewer the problems with body image and peer relations are observed. Understanding the psychological effects of menstruation leads to providing better education and conditions for adolescents to grow, especially those with early and late menarche.

## Acknowledgments

We would like to express our deepest appreciation to all the teachers and principals who contributed to this research. This endeavor would not have been possible without their support. The present study was approved under the ethics code of IR.PNU.REC.1398.147 by the Ethics Committee of Payam Noor University. It is also worth mentioning that the students and their parents' consent was also considered.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

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