

Peculiarities of the menstrual function of adolescent girls, internal migrants from the highland regions of Kyrgyzstan

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Abstract

Objective: To study the nature of changes and peculiarities of the menstrual function in adolescent girls, internal migrants from the highland regions of the republic, depending on the length of stay in lowland areas.

Methods: Overall 387 migrants from high-altitude girls were examined. The obtained data were compared with those of 280 girls, permanent residents of Bishkek. We examined the residence duration in both highlands and lowlands, the age of the menarche, the length of the menstrual cycle, the number of menstruation days, the frequency and the amount of blood loss before and after moving to lowland conditions.

Results: Lengthening of the menstrual cycle and an increase in menstruation days, as well as, a slight increase for blood loss during menstruation were revealed. The change in place of residence also affects the regularity of the menstrual cycle, which may be due to some hypocoagulation state of the hemostasis system in them during de-adaptation to low-mountain conditions. These changes are particularly pronounced when the term of residence in the lowlands is up to 1 year.

Conclusion: Thus, the study of peculiarities of menstrual function and tendencies of its changes in response to the move from highland region to the lowland region for adolescent girls showed that there is a slight increase of a menstrual cycle and an increase in the menstruation itself. In addition, there was an increase in the amount of blood loss during menstruation. The change of place of residence influenced the regularity of the menstrual cycle as well, which may be due to some hypocoagulation state of the hemostasis system in them during de-adaptation to low-mountain conditions. These changes are especially expressed for girls who just move in to the lowland region and being there for up to a year.

Key words: menstrual function, adolescent girls, internal migrants, highlands, maladaptation.

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Introduction

As it is known, the reproductive health and the reproductive function are the most important indicators of the public health, determining the quality of the offspring, the gene pool of the nation (1-6). The good health of the younger generation, including the reproductive one, is the potential for the economic and social development of the nation. At the same time, the issues of the proper care organization for the viability and health of the younger generation of girls, which represent the most important task of modern domestic healthcare, are of urgency (1, 7, 8). Early detection of various violations of the

reproductive system of girls and their timely correction is a managed factor in maintaining adolescent health (4, 6).

Sexual maturation and physical development of the girl is a complex, genetically determined process, influenced by various factors - socio-economic, environmental, climatic and geographic, and others. Moreover, it is during puberty that the pathology of the specific functions of the female body is formed, which manifests itself in the reproductive age and the foundations of a typical pathology are laid (2, 5, 9, 10).

In modern scientific literature on juvenile gynecology, much attention is paid to the influence of numerous factors on the

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development of the reproductive function and the state of the reproductive system. Many studies have revealed the existence of specific features of sexual and physical development of adolescent girls, depending on constitutional, ethnic and territorial and environmental factors (3-6).

The economic transformations of the last decades in the republic led to several medical, social and ethical problems that affected the health of the population in general and the health indicators of adolescent girls and their reproductive potential (1, 5, 7). Particularly relevant in modern conditions is the problem of studying the peculiarities of de-adaptation of permanent residents of highland regions of the republic, including teenage girls, to lowland conditions.

The purpose of this study was to examine the nature of changes and features of menstrual function in adolescent girls, internal migrants from the highland regions of the republic, depending on the length of stay in lowland conditions.

Methods

A total of 387 adolescents, internal migrants from the highland regions of the country were included in the study. The questionnaire was conducted and including, the residence duration in both highlands and lowlands, the age of the menarche, the length of the menstrual cycle, the number of menstruation days, the frequency and the amount of blood loss before and after moving to lowland conditions. The obtained data were compared with those of teenage girls,

permanent residents of Bishkek (n = 280). Informed consent was obtained in all surveyed participants.

Processing of quantitative data was carried out on a personal computer using Microsoft Office Excel 2003 SP3 software and macro-additions to it, XLSTAT-Pro, as well as IBM SPSS Statistics software with the definition of universally recognized parametric statistics criteria, calculation of relative indicators, average values and the Student's test.

Results and discussion

The mean age of the internal migrant girls who were surveyed was 16.5 ± 0.4 years, while the mean age of permanent resident girls in Bishkek was 16.3 ± 0.6 years old. The average residence duration in the lowlands (Bishkek) of migrant girls is 3.9 years. Out of the total number of interviewed migrant girls, 21.0% had stayed in the lowlands for up to 1 year, 58% for 1-5 years, and 21% for more than 5 years.

As it is known, the first menstruation, menarche, appears at the age of 12-13 years, 2 - 2.5 years after the larche - the beginning of the development of the mammary glands, which is the first phenotypic change in the prepubertal period that usually occurs in the age of 10. Identification of the age of the first menstrual period (menarche) showed that the average age of it among the internal migrant girls was 16.04 ± 0.02 years, which was late for more than 2 years compared to female residents of Bishkek, whose mean age of menarche was 13.4 ± 0.03 years (Fig. 1).

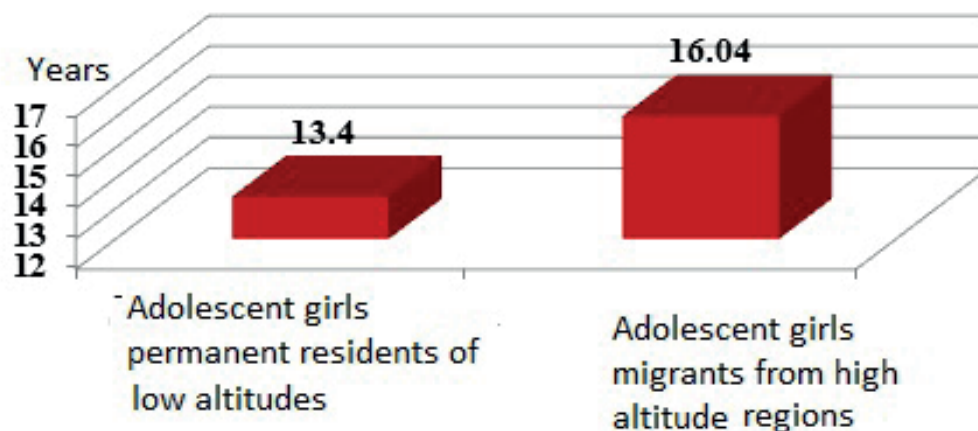


Figure 1. Menarche age of adolescent girls, permanent residents of low altitudes (Bishkek city) and internal migrants from high altitudes.

The change of frequency of the menstrual cycle and its duration after the change of residence, was indicated by an average of 22.6% of the interviewed female migrants. The analysis of the obtained data showed that the average duration of the menstrual cycle, for adolescent girls, permanent residents of the lowlands was 27.8 ± 0.04 days, while for adolescent girls, internal migrants from the highland regions of the republic was ranged from 29.7 ± 0.02 to 28.21 ± 0.01 days depending

on the time staying in lowland conditions (Tables 1, 2). At the same time, the increased duration of the cycle was detected in 71% of migrant girls, and the shortening in 9.8%. The duration of menstruation days for this category of adolescent girls averaged 4.6 ± 0.01 days, and as the time of staying in the valley increased, there was a decrease in menstrual periods from 5.05 to 4.16 days.

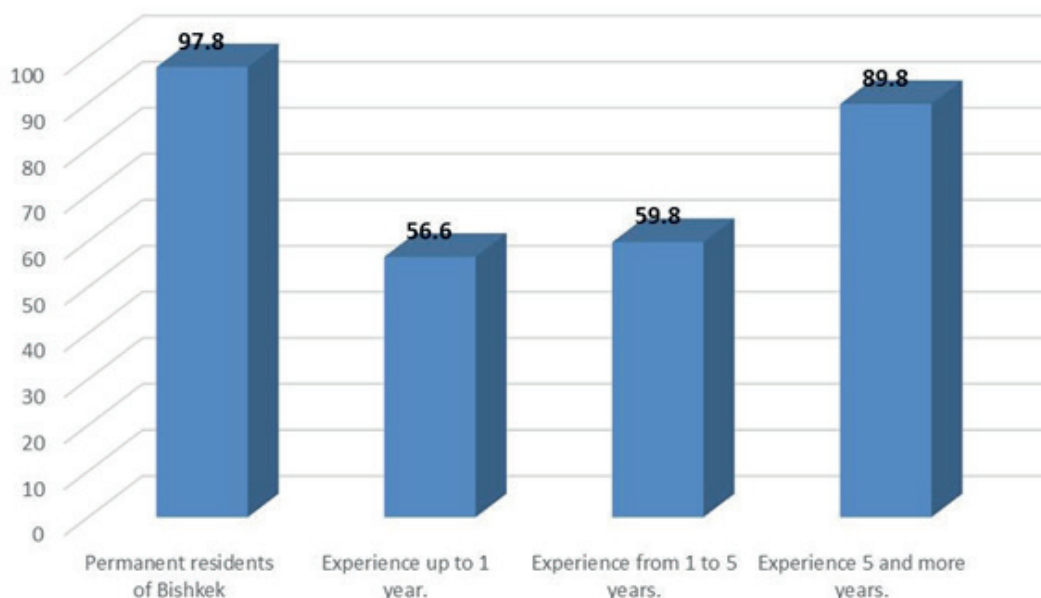
Table 1. Characteristics of the menstrual function among adolescent girls, permanent residents of lowland region (Bishkek city) (n=280).

Variables	Menarche age, year	Duration of a menstruation, days	Duration of a menstruation cycle, days	Regularity of a menstruation cycle, %
M±m	13.4± 0.03	4.5±0.01	27.8±0.04	97.8

Table 2. Characteristics of the menstrual function among adolescent girls, internal migrants from highland regions

Variables	Groups	Up to a year in the lowland conditions (n=81)	From a year to five in the lowland conditions (n=225)	From five years and longer in the lowland conditions (n=81)
Menarche age, year		16.02±0.02	16.03±0.02	16.03±0.02
Duration of a menstruation, days		5.05±0 .01	4.64±0.01 p< 0 .05	4.16±0.01 p< 0 .05
Duration of a menstruation cycle, days		29.7±0 .02	28.31±0 .02 p<0.05	28.21±0 .01 p<0.05
Regularity of a menstruation cycle, %		56 .6	59 .8	89 .8

The average of 27.6% of the surveyed girls from the highland regions indicated the change of regularity of a menstruation cycle (Fig. 2).

**Figure 2. Regularity of a menstrual cycle among adolescent girls (%), both from lowland and highland regions, where the second group is divided depending on the time they presented in lowland environment conditions.**

The largest number of teenage girls, who indicated irregularity of the cycle, are the internal migrants with 1 year or less of being a lowland resident (56.6%). Nevertheless, as the time of living in the lowland region increased, the number of them with violation of the regularity of the cycle decreased.

Most teenage girls, internal migrants (65.3%) indicated a slight increase in the amount of blood loss during menstruation,

especially in the first year of being lowland region resident.

The study of the parameters of the blood coagulation system of permanent residents of the high mountains revealed in them a hypocoagulation state of the hemostasis system with inhibition of fibrinolysis (lengthening the time of euglobulin fibrinolysis by 1.8 times) and some enhancement of anticoagulant blood activity (shortening of thrombin time

(up to 23.5 sec), increase in platelet count and fibrinogen (by 12.8%). During the period of de-adaptation to low-mountain conditions in the hemostasis system, shifts were observed in the first days towards hypercoagulation, but by 40 days in the low-mountain region, a part of the indices changed toward hypocoagulation (euglobulin fibrinolysis, antithrombin III activity, XIII factor activity).

Conclusions

Thus, the study of peculiarities of menstrual function and tendencies of its changes in response to the move from highland region to the lowland region for adolescent girls showed that there is a slight increase of a menstrual cycle and an increase in the menstruation itself. In addition, there was an increase in the amount of blood loss during menstruation. The change of place of residence influenced the regularity of the menstrual cycle as well, which may be due to some hypocoagulation state of the hemostasis system in them during de-adaptation to low-mountain conditions. These changes are especially expressed for girls who just move in to the lowland region and being there for up to a year. Then, as the time passes, there is an adaptation of the female body to the changed conditions of the external environment.

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