

Reproductive Health of Residents of the Highlands of the Tien Shan, Pamir and Alai in Conditions of Social Pressure

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ABSTRACT

For centuries, ethnic Kyrgyz women living in the Pamirs on the territory of Afghanistan have been constantly exposed to a complex of problems of the negative influence of high altitude factors, low social-economic standards of living, which indirectly affect the work of the functional system "mother - placenta - foetus". Considering the above facts, this work is aimed at identifying the characteristics and nature of reproductive behaviour in 149 women of high altitude Pamir and Alai, foothills of the Tien Shan pregnant women with tuberculosis, and somatically healthy residents of the low mountains of Bishkek (760 m above sea level) within the age limits of 18 - 45 years. The obtained data were processed according to generally accepted methods of variation statistics and the calculation of Student criterion, with the identification of significant differences in the groups.

As a result of the studies, it was found that the inhabitants of the Afghan Pamir were significantly inferior in comparison with other women of the highlands of Chon-Alai and even women with tuberculosis in the Chui region due to their anthropometric data. Because of the lack of family planning technology for women in the Afghan Pamirs, the highest parity rates were found (22% with a parity of childbirth of 9 or more, and if count 5 or more - 35.4%) comparing with women in mountainous regions, in more than 90% early sexual life was registered (from 10-12 years). Anamnesis of the studied groups showed the highest percentage of spontaneous miscarriages in the Chon-Alai group and in the city of Bishkek. As for of gynaecologic diseases, every second woman in the Afghan Pamir (48.4% of cases) had menstrual irregularities, in Chon-Alai women inflammatory diseases are more common (88.8% of cases). In the studied groups pregnant women with a history of tuberculosis 3 and more abortions were most commonly registered in 6.6% of cases. The above-mentioned reproductive health disorders in the studied groups of women residents of the Pamir and Chon-Alai and in women with tuberculosis require close attention and effective assistance in the field of Reproductology and family planning; undoubtedly, all these technologies are based on the need to improve the social-economic standard of living.

KEYWORDS

Reproductive Health, Ethnic Kyrgyz Women in Mountainous Regions, Reproductive Health and Tuberculosis.

Relevance of the Topic

Currently, the social and economic reorganization of many countries has led to an increase in poverty and unemployment, the collapse of social protection systems, as well as sharp reductions in the share of expenditures on health and the social sector, in the Kyrgyz Republic, in particular. This has a devastating effect on the reproductive health of the population. At the international level reproductive health is recognized as one of the main components and is fundamental to the social-economic development of the whole society. The reproductive health services provided are even below the level of opportunities and current requirements, especially for the poor living in the far mountainous regions, as well as for migrants and refugees [1]. In this aspect of the studies, tuberculosis in women is a predictor of the social-economic level, living conditions and a marker of effectiveness, the implementation of government technology for reproductive health programs[2,3,4,5, 6].The primary task of reproductologists is to reduce perinatal morbidity and mortality in women, improve the reproductive health of women living in mountainous regions, especially in conditions of constant vertical population migration.

Extreme climatic regions include mountains, which occupy about one third of the Earth's land. Khambloch's calculations show that at an altitude of more than 3 km above sea level live about 0.5% of the Earth's population, and high-mountain populations are mainly settled on the territory of the South American Andes and Asia [7, 8]. All new technologies that have been achieved should be aimed at improving living conditions in the discomfort zone and providing medical support to people at altitude. However, for many decades, scientists and researchers have not been able to solve the problems of the negative influence of high altitude factors, primarily hypoxia, on the human body [9, 22, 23] and its indirect effect on the functional system "mother - placenta - foetus" [14, 17, 19, 21, 24, 25].

The Kyrgyz Republic is located in the north-eastern part of central Asia in the regions of the Tien Shan and Pamir mountain systems. About 90% of the Kyrgyz territory is above 1,500 m above sea level, where 1.262 million people constantly live, which is 15% of the total population in the midlands and 9% in the highlands [10, 11].

As a part of realization of the goals of the Millennium Summit, the state has adopted numerous programs to protect public health [18, 19, 20, 26]. One of the latest programs adopted by the Government of the Kyrgyz Republic to protect public health and develop the healthcare system for 2019-2030 is the program "A healthy person is a prosperous country". The program has a program-targeted approach for investing in public health and in modernization of the system, providing healthcare services, according to which the order of the Ministry of Health of the Kyrgyz Republic No. 36 of February 6, 2019 "On the Realization of the Decree of the Government of the Kyrgyz Republic" was adopted [12]. As a part of the realization of the tasks set, it is now becoming increasingly important to study and improve the reproductive health of women living in the high mountains of the Tien Shan, Alai, and Pamir, the population of the latter continues to decrease every year [13].

Study of the state of reproductive function among the residents of the Pamir belonging to the territory of Afghanistan is of special interest, considering the fact that in the history of ethnic Kyrgyz people constantly living at large heights of the small and large Pamirs, isolated from the outside world, no studies of medical and social status have been carried out before. According to various estimates of scientists and researchers, the population of the Afghan Pamir is about 3000

people [13].

The ethnic Pamirs Kyrgyz have a thousand-year history of the peoples of Central Asia, Afghanistan, Pakistan and China. Having settled in the territory, surrounded on all sides by the Republics of Tajikistan, Afghanistan, Pakistan and China, the people had to stay and survive in the highlands (more than 4000 m above sea level), and a low level of social-economic life in the conditions of a nomadic lifestyle. Residents of this region are on the verge of extinction.

The program developed under the government of the Kyrgyz Republic and intended to help ethnic Kyrgyz living at an altitude of 4000 meters above sea level in Afghanistan included the organization of an expedition, which included specialists in relevant areas of high-altitude medicine. The program included social, humanitarian and medical assistance to the population over the past 5 years, and within the framework of this program the study was carried out.

The aim of the study was to analyse obstetric and perinatal outcomes, and the reproductive health status of women living in the high mountains of the Tien Shan, the Afghan Pamir and Chon-Alai.

To achieve this aim, the objectives of the study were:

1. To analyse the status of reproductive and somatic health of women in the high mountains of the Tien Shan, Chon - Alai and the Afghan Pamir
2. To make a comparative analysis of the reproductive health of women of different heights of the Tien Shan, the highlands of the Afghan Pamir and women who fell ill with tuberculosis during pregnancy in the lowlands.

Materials and Methods

This study was approved by the Committee on Bioethics KSMA named after I.K. Akhunbaev, protocol №. 2 of 04.19.2017; №.3 of 23.05. 2017.

31 women of reproductive age living in the conditions of the Afghan Pamir (4000 m above sea level) were examined, which made up the first main group. The second group consisted of 36 women of reproductive age living in the Chon - Alai region (Daroot - Korgon, 2468 m above sea level), the third group consisted of 45 pregnant women with tuberculosis who was admitted to the City perinatal center (Bishkek, low mountains - 760 m above the sea level) in 2005-2017.

The fourth control group consisted of 37 women of reproductive age, somatically healthy, who were admitted for delivery to the Chui regional hospital (760 m above the sea level), the characteristics of the groups are shown in Table 1. In 45 pregnant women with tuberculosis, a retrospective and prospective analysis was performed according to case histories of pregnancy and childbirth, residents of the lowlands admitted for appropriate assistance in the conditions of the City Perinatal Center in the period 2005-2017.

Research methods: Generally accepted methods for assessing anthropometric data and an analysis of somatic and reproductive history, objective status, laboratory tests were performed using glucometers, hemoglobinometers, rapid tests for protein and bacteria, instrumental research

methods: ECG was performed using a MAC 600 portable electrocardiograph. USI of the organs of the abdominal cavity and pelvic organs using ultrasound apparatus Mindray DP-50 was carried out.

The obtained data were processed using generally accepted methods of variation statistics and the calculation of the Student's criterion, with the identification of significant differences in the groups.

Results

In the age category, the studied groups of women had no significant differences. Ethnic Kyrgyz women in the Afghan Pamir is of height - 152.0 ± 1.08 comparing with Bishkek women of the control group 167.6 ± 0.67 ($P 1.4 > 0.2$). The body mass in the group of women in the Afghan Pamirs was also lower, 51.0 ± 1.80 , respectively, comparing with the control of Bishkek women 77.7 ± 1.49 ($P 1.4 < 0.001$), which undoubtedly was reflected in the calculation of BMI - body mass index. In women of the Pamirs of the main study group, BMI was low, only 22.2 ± 0.71 the control in somatically healthy women from of Bishkek - 27.7 ± 0.54 ($P 1.4 < 0.001$). It should be noted that in the group of women who fell ill with tuberculosis during pregnancy, the indicators of height and weight were higher than in the group of women from the Afghan Pamir, and also had a significantly significant difference ($P 1.3 < 0.001$).

Table 1. Characteristics of the studied groups

| Groups studied | Mean age ($M \pm m$) | Middle age ($M \pm m$) | Mean weight ($M \pm m$) | Mean BMI ($M \pm m$) |
|------------------------|---------------------------|-----------------------------|------------------------------|---------------------------|
| 1. Pamir n=31 | 32.3 ± 2.2 | 152.0 ± 1.08 | 51.0 ± 1.80 | 22.2 ± 0.71 |
| 2. Chon - Alai n=36 | 37.4 ± 2.2 | 161.4 ± 1.22 | 61.3 ± 1.57 | 23.8 ± 0.53 |
| P | $P 1.2 > 0.1$ | $P 1.2 < 0.001$ | $P 1.2 < 0.001$ | $P 1.2 > 0.1$ |
| 3. Bishkektbc n=45 | 28.5 ± 0.67 | 164.2 ± 1.61 | 64.3 ± 1.34 | 19.4 ± 0.57 |
| 4. Bishkek n=37 | 29.7 ± 0.95 | 167.6 ± 0.67 | 77.7 ± 1.49 | 27.7 ± 0.54 |
| | $P 3.4 > 0.2$ | $P 3.4 > 0.1$ | $P 3.4 < 0.001$ | $P 3.4 < 0.001$ |
| | $P 1.4 > 0.5$ | $P 1.4 > 0.2$ | $P 1.4 < 0.001$ | $P 1.4 < 0.001$ |
| | $P 1.3 > 0.1$ | $P 1.3 < 0.001$ | $P 1.3 < 0.001$ | $P 1.3 < 0.001$ |

Analysis of the social-economic living conditions showed that in the main groups of the Afghan Pamir and Chon-Alai, unemployed women accounted for the largest percentage of cases, 100% and 78%, respectively. The study of bad habits revealed that in 19.4% of cases, Pamir women smoked unfiltered tobacco, while in the control group of Bishkek only 25% of women smoked. In the group of women with tuberculosis during pregnancy in the foothills of the Tien Shan, 53.3% of women lived in new buildings (one woman did not have a permanent residence), during pregnancy 18% of women were not registered, 30 of 45 women were newcomers from the

regions, 35 pregnant women did not work anywhere, 3 were students of metropolitan universities and 7 worked in enterprises.

The mean age at the onset of sexual activity in Pamir women was registered in adolescence and was 12.8 ± 0.50 years, comparing with the control, where this figure was 21.5 ± 0.42 ($P_{1.3} < 0.001$). At the same time, in Chon-Alai women, the age of marriage was 20.7 ± 0.58 , in the control group in the low mountains, women married at 21.5 ± 0.42 years, so there was no statistically significant difference comparing with Chon-Alai and Bishkek.

Table 2. The beginning of sexual activity in groups

| Studied groups | Mean age of sexual life beginning ($M \pm m$) |
|--------------------------|---|
| I. Pamir (n=28) | 12.8 ± 0.50 |
| II. Chon-Alai (n=35) | 20.7 ± 0.58 |
| P _{1.2} < 0.001 | |
| III. Bishkek tbc (n=45) | |
| IV. Bishkek (n=37) | 21.5 ± 0.42 |
| P _{1.3} < 0.001 | |
| P _{2.3} > 0.2 | |

According to the data, analysing the menarche age in the compared groups, the was revealed: in the girls of the Afghan Pamir, the menarche age is 13.5 ± 0.20 years, while for somatically healthy women in the low mountains (in the control group, Bishkek) this figure was 13.7 ± 0.25 years, ($P_{1.4} P > 0.5$), the difference in the groups is not statistically significant. In the group of Chon-Alai women, in comparison with the data of the women of the control group, no statistically significant difference was revealed, the data is presented in table 3.

However, considering that the girls of the Pamir got married from 10 to 12 years of age in 90% of cases, it is possible with this calculation there is a discrepancy with the true situation. It should be noted that in the study groups, the duration of menstruation in the women of the Afghan Pamir was the longest, 4.9 ± 0.23 days compared with the control group, where it was 3.8 ± 0.14 ($P_{1.4} < 0.001$). It should be noted that in the high altitude groups of Chon-Alai (group 2) and in women with tuberculosis (group 3), the duration of menstruation was also longer, 4.6 ± 0.17 and 4.5 ± 0.16 , respectively, compared with the data for somatically healthy women residents of the low mountains (in the group control, Bishkek city $P_{2.4} < 0.001$; $P_{3.4} < 0.001$).

Table 3. Characterization of the average age of menarche in the studied groups

| Groups studied | Mean age menarche ($M \pm m$) | Mean duration of menstruation ($M \pm m$) |
|-----------------------|---------------------------------|---|
| 1. Pamir (n=31) | 13.5 ± 0.20 | 4.9 ± 0.23 |
| 2. Chon-Alai (n=36) | 14.3 ± 0.23 | 4.6 ± 0.17 |
| P _{1,2} | P _{1,2} $P < 0.01$ | P _{1,2} $P > 0.1$ |
| 3. Bishkek tbc (n=45) | 13.7 ± 0.25 | 4.5 ± 0.16 |
| 4. Bishkek (n=37) | 13.3 ± 0.20 | 3.8 ± 0.14 |
| P _{3,4} | P _{3,4} > 0.2 | P _{3,4} < 0.001 |
| P _{1,3} | P _{1,3} > 0.5 | P _{1,3} > 0.2 |
| P _{1,4} | P _{1,4} > 0.5 | P _{1,4} < 0.001 |

| | | |
|------|---------------|-------------|
| P2,4 | P 2, 4 <0.001 | P2,4 <0.001 |
|------|---------------|-------------|

According to the anamnesis, the contraceptives was completely excluded in the group of Pamir women because of the lack of access to modern methods of contraception, as well as medical facilities, including for family planning, the data are shown in table 3. However, the control group also revealed low use of contraceptive, only 22%.

Table 4.Characterization of contraceptive use in the studied groups

| Contraception | Yes | | No | |
|---------------------|-----|------|-----|-------|
| | n | % | n | % |
| 1.Pamir (n=31) | 0 | 0 | 31 | 100.0 |
| 2.Chon-Alai (n=36) | 5 | 14% | 31 | 86% |
| 3.Bishkektbc (n=45) | 7 | 15.5 | 38 | 84.4 |
| 4.Bishkek (n=37) | 8 | 22% | 29 | 78.4 |
| Total (n=149) | 20 | 13.4 | 129 | 86.5 |

The obstetric history of the studied groups showed that according to the number of pregnancies in the group of Pamir women, 5 - 8 pregnancies made the largest percentage of cases – 35.4%, women of the Bishkek group also showed the largest percentage of cases at this parity, 29.7% of cases. In Bishkek group prevailed women who had a history of 1 pregnancy, 24%, while women in the Pamirs had one pregnancy in 16% of cases. Pamir women with 9 or more pregnancies showed the highest percentage of cases, 22%, while in the Bishkek group and in other groups, there were no such cases. This conclusion, undoubtedly, is connected with the difficult accessibility of family planning and contraceptive services for women of the Pamir group.

Table 5.Pregnancy parity in the study groups

| Number of pregnant/ Groups studied | 0 | | 1 | | 2 -4 | | 5 -8 | | 9 -11 | |
|---------------------------------------|----|----|---|----|------|------|------|------|-------|------|
| | n | % | n | % | n | % | n | % | n | % |
| 1. Pamir (n=31) | 3 | 10 | 5 | 16 | 5 | 16 | 11 | 35.4 | 7 | 22.5 |
| 2.Chon-Alai (n=36) | 12 | 33 | 4 | 11 | 12 | 33.3 | 8 | 22.2 | 2 | 5.5 |
| 3. Bishkektbc. (n=45) | - | | 9 | 20 | 26 | 58 | 8 | 17.7 | 0 | 0 |
| 4. Bishkek (n=37) | - | | 9 | 24 | 17 | 46 | 11 | 29.7 | | |

Due to the anamnesis, women who gave birth to 9 or more children prevailed in the Pamir group, they were only in this group, while in the group of Bishkek women there were no women who gave birth to more than 6 babies (table 6). In the group of Bishkek women without somatic pathologies, the largest percentage of cases was found among women who had one childbirth, making up a history of 21.6% of cases, also in the group of women of Bishkek with tuberculosis this figure was high, up to 35% of cases.

Table 6.The number of births in the studied groups

| Number of births | 0 | | 1 | | 2-4 | | 5-8 | | 9-11 | |
|------------------|----|------|---|----|-----|------|-----|------|------|------|
| | n | % | n | % | n | % | n | % | n | % |
| Pamir (n=31) | 6- | 19.3 | 4 | 13 | 4 | 13 | 11 | 35.4 | 6 | 19.3 |
| Chon-Alai (n=36) | 14 | 38,8 | 4 | 11 | 11 | 30.5 | 6 | 16.6 | 1 | 2.7- |

| | | | | | | | | | | |
|-----------------|---|-----|----|------|----|----|---|------|---|---|
| Bishkektbc (45) | 0 | 0 | 16 | 35 | 28 | 62 | 2 | 4 | - | - |
| Bishkek (n=37) | 1 | 2.7 | 8 | 21.6 | 20 | 54 | 8 | 21.6 | - | - |

Analysis of the case histories showed that women did not have abortions in the Pamir group for religious reasons, undoubtedly this was also associated with the absence of the obstetric and gynaecological service as such, while in Bishkek 1 abortion was the highest percentage cases - 11% within the group (table 7).

However, more than 3 abortions were in the Bishkek group making 6.6%, in women with tuberculosis it was 6.6%. The highest percentage of abortions was found in the Chon-Alai women group, 16.6%, in the Bishkek group with tuberculosis this parameter was 15.5%.

Table 7. The number of abortions in the studied groups

| Number of abortions | 0 | | 1 | | 2 | | More than 3 | | Total in groups | |
|---------------------|----|------|---|-----|---|-----|-------------|-----|-----------------|------|
| | n | % | n | % | n | % | n | % | n | % |
| 1.Pamir (n=31) | 31 | 100 | - | - | - | - | - | - | 0 | 0 |
| 2.Chon-Alai (n=36) | 30 | 83 | 4 | 11 | 1 | 3 | 1 | 2.7 | 6 | 16.6 |
| 3.Bishkektbc (n=45) | 38 | 84.4 | 2 | 4.4 | 2 | 4.4 | 3 | 6.6 | 7 | 15.5 |
| 4.Bishkek (n=37) | 32 | 86 | 4 | 11 | - | - | 1 | 2.7 | 5 | 13.5 |

Interesting data were obtained in the analysis of antenatal (spontaneous miscarriages) and postnatal losses. Thus, in the group of Chon-Alai women spontaneous miscarriages amounted to only 2.7%, while in the group of Pamir women and women living in low mountains, figures were significantly higher (table 8). This fact is of special interest. Probably besides the features of intrauterine development, there is an influence of environmental factors, as well as the availability of quality medical services. In the history of Pamir women, spontaneous miscarriages were registered in 35% of cases, while in the city of Bishkek in the group of women without somatic pathologies, this indicator amounted to 27% of cases. However, Bishkek women with tuberculosis had 2 or more spontaneous miscarriages, i.e. the highest percentage of cases, 11%, comparing with Bishkek women without somatic pathology, where this figure was 8% of cases, in the group of Pamir women it was also high - 22.5% of cases.

Single miscarriage was registered in 19% percent of cases in the Bishkek control group, in the Pamir group - in 13% of cases and in the Chon-Alai women group there was the lowest rate - 2.7% of cases.

Table 8. The number of miscarriages in the study groups

| Number of miscarriages | 0 | | 1 | | 2 and more | | Total | |
|------------------------|----|------|---|-----|------------|------|-------|------|
| | n | % | n | % | n | % | n | % |
| 1.Pamir (n=31) | 20 | 64.5 | 4 | 13 | 7 | 22.5 | 11 | 35.4 |
| 2.Chon-Alai (n=36) | 35 | 97 | 1 | 2.7 | - | - | 1 | 2.7 |
| 3.Bishkektbc (n=45) | 37 | 82.2 | 3 | 6.6 | 5 | 11.1 | 8 | 17.7 |
| 4.Bishkek (n=37) | 27 | 72.9 | 7 | 19 | 3 | 8.1 | 10 | 27 |

According to the research work among gynaecological diseases (table 8), in the anamnesis of women in the Chon-Alai group, the largest percentage of cases revealed inflammatory diseases of the genitals of 88.8%, while in women with tuberculosis this indicator was 35.5%, Pamir group - 32.2% of cases.

Among the gynaecological diseases in the history of menstrual irregularities, the largest percentage of cases was in the Pamir group - 48.3, in the women of the Chon-Alai group - 16.6% of cases, in the group of somatically healthy women in Bishkek this figure was - 5% of cases. In the group of women with tuberculosis during pregnancy a history of menstrual irregularities was not detected.

Table 9.Gynaecological diseases in the studied groups

| Gynecological diseases | Pamir (n=31) | | Chon-Alai (n=36) | | Bishkektbc (n=45) | | Bishkek (n=37) | |
|--------------------------------|-----------------|------|---------------------|------|----------------------|------|-------------------|----|
| | n | % | n | % | n | % | n | % |
| Genitalinflammatorydiseases | 10 | 32.2 | 32 | 88.8 | 16 | 35.5 | 2 | 6 |
| Menstrual cycle disorder - MSD | 15 | 48.3 | 6 | 16.6 | - | - | 2 | 5 |
| Cervical diseases | 4 | 13 | 2 | 3 | 1 | 2.2 | 7 | 19 |
| Benign tumors of appendages | - | - | 7 | 19 | - | - | 1 | 3 |

At the same time, in the control group in women, diseases of the cervix uteri, which accounted for the highest incidence in 19% of cases, among the studied groups, inflammatory diseases of the genitals were found in 6% of cases, menstrual irregularities in 5% of cases, in general gynecological disease accounted for 30% of cases in the case histories. A detailed examination of the structure of inflammatory diseases of the female genital organs showed that vaginal inflammation occurs in the group of women in the Afghan Pamir most often making up 13%, and then on the incidence is endomyometritis - 9.7% and less common cystitis - 3% of cases.

Table 10.The structure of inflammatory diseases in the studied groups

| Gynecological diseases | Pamir (n=31) | Chon-Alai (n=36) | Bishkek tbc (n=45) | Bishkek (n=37) |
|------------------------|-----------------|------------------|--------------------|----------------|
| IDUB | | | | |
| Endomyometritis | 3 (9.7%) | 5 (13.9%) | 2 (4.4%) | 1 (2.7%) |
| IDGUT – cystitis | 1 (3.2%) | 8 (22.2%) | 1 (2.2%) | - |
| IDGA | - | 19 (52.8%) | 10 (22.2%) | 2 (5.4%) |
| IDUB - colpitis | 4 (12.9%) | | 15 (33.3%) | - |

In the group of Chon-Alai women, inflammatory diseases of the uterine appendages – IDUA, 52.8% of cases, are commonly observed, then inflammatory diseases of the genitourinary tract – IDGUT, 22% of cases, and inflammatory diseases of the uterine body -IDUB in third place - 14% of cases. In women with tuberculosis during pregnancy, the most common in the structure of gynecological diseases are inflammatory diseases of the genital tract –IDGT, 33% of cases, inflammation of the urogenital tract and uterine body were less common. In comparison, in the health group, in the structure of gynecological diseases, inflammatory diseases of the uterine appendages are found in 5.4% of cases, and inflammatory diseases of the uterus in 2.7% of cases.

In the studies of the somatic history a wide range of somatic diseases was found. Thus, in the group of women in the Afghan Pamirs, the most common were the diseases of the hematopoietic system - anemia in 22.6% of cases, kidney diseases - chronic pyelonephritis in 9.7% of cases, and at last respiratory diseases - COPD - chronic obstructive pulmonary diseases - 6.5% of cases,

diseases of the digestive system are also common - chronic gastritis in 6.5% of cases.

In Chon-Alai women, the most common in the structure of diseases were kidney diseases (chronic pyelonephritis), 64% of cases, hematopoietic system disease (anemia) in this group were in 27.8% of cases, diseases of the gastrointestinal tract (chronic cholecystitis)- in 8.3% of cases.

In the group of women with tuberculosis, in 80% pregnancy was accompanied by hematopoietic system (anemia) and kidney diseases (chronic pyelonephritis, glomerulonephritis) were in 11% of cases, and 4% of cases had hepatitis C and mild preeclampsia, gestational edema without proteinuria.

Discussion

The negative influence of the difficult climatic and geographical conditions of the high mountain climate of Chon-Alai and the Afghan Pamir on the development and maintenance of the general somatic and reproductive health of women has been established. Due to the results of the study, it is possible to state that the low level of social-economic development and the lack of medical support for residents in the high mountains of the Afghan Pamir led to more pronounced and worse reproductive health parameters than in other groups studied. The results of the study are generally consistent with the literary data [14, 15, 16, 19, 20, 21]. Thus, ethnic Kyrgyz women in the Pamirs is of a lower height and body weight, and accordingly BMI, compared with other groups. Inhabitants of the Afghan Pamir also significantly lagged behind on anthropometric parameters from the group of patients who fell ill with tuberculosis during pregnancy, living in the low mountains, and had a significant difference ($P = 1.3 < 0.001$). Analysis of the menstrual function in girls of the Afghan Pamir showed that menarche age was not significantly different than that in other groups. This can be explained by the fact that in the group of the Afghan Pamir women began sexual life at 10-12 years, 12.8 ± 0.50 years in mean. The data obtained are consistent with the literary data [16]. Thus, early marriage occurs in 20% of cases of Nepal residents where women marry at the age of 16-17 years. Similar data were found in the residents of Duan Al-Guerra [14, 15]. Pamir women began their sexual life at the age of 10-12 years in more than 90% of cases.

Due to literary data [27, 28], in 62% of the inhabitants of the highlands of the Pamir-Alai and the Himalayas, menstruation repeat in 30 days or more, i.e. long cycles (opsomenorrhea) are more characteristic for them, while in 42% of low-altitude residents the duration of the menstrual cycle is shorter (proiomenorrhea). The data obtained are consistent with the data of researchers of reproductive function in women of the Republic of Yemen [15, 16]. In 35% of cases women of Al-Guerra had a number of varieties of irregular menstrual cycles – dysmenorrhea. Thus, in Pamir women menstrual irregularities were found in 48.3% of cases. Our data are consistent with the literary data [14, 16]. In women of the highlands menarche occurred not only later, but also the number of menstrual bleeding days lasted longer than in women of the lowlands. It should be noted that the higher the height, the later the menarche occurred.

According to the literature [16], studies of the reproductive behavior of women considering contraception showed that every fourth woman (23.4%) of Vaktapur uses Depot-Provera, while residents of Bishkek often use IUDs. Al-Guerra residents use both the IUD, Depo Provera and oral contraceptives and 10% do not use the family planning method at all [15], while in the group

of women with tuberculosis the use of contraception was in 15.5% of cases. Considering limited access to contraceptive methods and technologies of family planning, women in the group of the Afghan Pamir, showed a high pregnancy parity - more than 9, which occurs in 22% of cases. It is more than in all comparison groups. However, in the group of women in the Afghan Pamir, the presence in a case history of one spontaneous miscarriage occurred in the largest percentage of cases comparing with other groups, accounting for only 35% of cases. Interesting results were obtained when studying the structure of gynecological diseases, for example, in the group of Chon-Alai women. Inflammatory processes of the genitals accounted for the largest percentage of 88% of cases. In pregnant women with a history of tuberculosis, inflammatory diseases accounted for 35.5% of cases. Menstrual irregularities in Afghan women were found in almost every second woman in 48.3% of cases, while in the control group of somatically healthy women, a history of menstrual irregularities was detected in only 5% of cases. When analyzing somatic diseases in the studied groups, the women of the Afghan Pamir most often experience pregnant anemia, 22% of cases, which is explained by the low social-economic level and climatic condition and geographical place of residence, while in the group of pregnant women with tuberculosis anemia occurs in 80% of cases. The high incidence of anemia in the group of women with tuberculosis is obviously due to the toxic effects of a specific infectious process on the hematopoiesis system, on the one hand, and the ever-increasing need for the fetus, on the other hand. High incidence of kidney diseases is noted in the groups. Thus, chronic pyelonephritis is most common in the group of Chon-Alai women, 64% of cases, and in the group of the Afghan Pamirs, this parameter is 9.7% of cases, but in this group chronic obstructive pulmonary diseases, COPD, occur in 6.5% of cases. However, in Chon-Alai women chronic cholecystitis was found in 8.3% of cases.

Conclusion

Based on the above data, the following conclusions can be made:

1. Ethnic Kyrgyz women in the Pamirs of Afghanistan are of low height and body weight, compared with women in Chon-Alai and women with tuberculosis during pregnancy and with the Bishkek control group, accordingly.
2. More than 90% of women of the Afghan Pamir began sexually life at the age of 10-12 years, not even reaching adolescence, but say that the onset of menstruation began in mean age of 13 years; thus, reliability of the assessment is doubtful.
3. Women of the Afghan Pamir do not have sufficient support in the field of family planning and contraceptive methods, and therefore, parity of childbirth and pregnancy of more than 9 were the highest, 19.3%, and also exceeded the rates of spontaneous miscarriages in 35% of cases among the studied groups of women.
4. In the structure of gynecological diseases in women residents of the highlands of Chon - Alai, inflammatory diseases accounted for 88% of cases. At the same time, among women living in the Afghan Pamir among menstrual irregularities accounted for 48.3% of gynecological diseases.
5. In the group of women with tuberculosis during pregnancy, s that the number of more than abortions 3 was registered in -6.6% of cases, and the number of more than 2 spontaneous was -11% less than in other groups, and in the group of women of the Pamir there were no abortion in general.
6. In the structure of somatic diseases in the group of Chon-Alai women, kidney disease were found in 64% of cases, in 27% of cases there was anemia, while in women with

tuberculosis during pregnancy, anemia and chronic pyelonephritis, glomerulonephritis occurred in 11% of cases, in the group of the Afghan Pamir women anemia was found in 22% of cases, revealed kidney disease in 9.7% of cases and COPD in 6.5% of cases.

Thus, the conditions of the highlands and the low social-economic status of women in the Afghan Pamir showed the worst results in terms of reproductive health and general somatic status in comparison with women living in the highlands of Chon-Alai and women with tuberculosis during pregnancy. This fact must, undoubtedly, attract attention and real support from medical workers and state assistance to preserve the population and their development as a community of ethnic Kyrgyz people with the right for a better quality of life and the right for reproductive health.

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