



## Reproductive Health of Adolescent Girls Is A Medical And Social Issue

Ryskeldiyeva K.<sup>1</sup>, Shukenova E.<sup>2</sup>, Zhaxybergenov A.<sup>1</sup>, Baimakhanova B.<sup>3</sup>, Zholymbekova L.<sup>1,3</sup>, Ishigov I.<sup>1</sup>, Kemelbekov K.<sup>3</sup>, Tuktibayeva S.<sup>1</sup>

<sup>1</sup>Khoja Akhmet Yassawi International Kazakh-Turkish University, Turkistan

<sup>2</sup>Kazakhstan's Medical University «KSPH» Almaty

<sup>3</sup>South Kazakhstan Medical Academy, Shymkent

\*Corresponding author: Ryskeldiyeva K., Khoja Akhmet Yassawi International Kazakh-Turkish University, Turkistan, Email: kenzhe1900@mail.ru

Submitted: 18 March 2023; Accepted: 15 April 2023; Published: 12 May 2023

### ABSTRACT

**Background:** It is now known the reproductive health of adolescent girls is declining. Therefore, in this article, a prospective cohort study of adolescent girls aged 7-19 living in the Turkestan region was conducted in order to identify the reproductive pathology of girls living in the Turkestan region and the main issues leading to reduced reproductive health.

**Material and Methods:** This work was conducted on the basis of a special survey of high school girls in Turkestan region. The total number of girls is 5721. The design of the study used the method of population research of prospective cohorts.

**Results:** The results of the study were analyzed and the main factors leading to a decrease in reproductive health of adolescent girls were identified. The relationship between the main factors affecting reproductive health was also analyzed.

**Conclusion:** Adolescent girls living in environmentally unfavorable areas have a higher incidence of extragenital pathology, menstrual disorders and inflammatory diseases.

**Keywords:** *adolescent girls, reproductive health, ecology, extragenital pathology, dysmenorrhea, vulvovaginitis*

### INTRODUCTION

Reproductive health of adolescents is the main focus of pedagogy, physiology and public health. Puberty is a period of change that goes through important stages for the development of the child's reproductive system [1]. Comprehensive analysis and solutions to the problem of reproductive health at the national and international levels is a key step in maintaining the health of the family and society [2]. Adolescent reproductive health is an important part of society [3].

Adolescents are more likely than other age groups to be addicted to drugs, smoke, drink alcohol, engage in unhealthy activities, including unprotected sex [4]. These factors lead to mental disorders in adolescents, depression [5]; various infections, skin and venereological diseases, especially HIV, hepatitis [6]; pelvic inflammatory disease, infertility and ectopic pregnancy [7,8]; unplanned pregnancy, illegal and dangerous abortions [5,9]; pregnancy and complications of childbirth lead to more frequent infant and maternal deaths [10-15].

The formation of reproductive health of adolescents is an important resource of demographic indicators of the population [16-21]. An important indicator of the formation of reproductive health is its close connection with somatic, physical and mental health, awareness of risk factors and prevention of reproductive health disorders, sexual behavior and public relations [22-27].

Another important factor influencing the development and health of adolescents is the environmental situation in Kazakhstan. Over the past 10 years, the prevalence of certain nosological diseases among adolescents has increased due to environmental pollution. Diseases of the endocrine system, urogenital and circulatory systems, digestive system are common in such an unfavorable ecological zone. In particular, the prevalence of common respiratory diseases and allergic diseases reached 28.1% - 45.2% [28]. Impaired environmental control leads to the deterioration of children's health, characterized by the growth of chronic diseases, disorders of physical and mental development and social adaptation [29,30].

Many endogenous and exogenous risk factors in the onset and development of puberty in adolescent girls can lead to significant impairment of puberty when exposed to excessive prolonged and strong. Thus, the process of puberty is influenced by genetic, hereditary and social factors, as well as nutrition, iodine deficiency, emotional and physical stress [31-34]. In addition, the main factors influencing physical and sexual development in girls are: genotype, perinatal factors, hormonal formation, condition of the autonomic nervous system, adequate balanced diet, absorption and assimilation of nutrients, normal functioning of the enzyme system, adequate energy and oxygen supply, sleep The quality, physical activity, chronic diseases and poisoning, are environmental conditions [35].

According to Russian scientists, the share of gynecological and andrological diseases among children has reached 50% in the last 5 years [36,37]. The prevalence of inflammatory diseases of the reproductive system among adolescent

girls aged 15-17 increased by 38.7% and menstrual disorders increased by 24.8% [38].

According to American and Spanish scientists, factors that negatively affect the reproductive health of adolescents include a high incidence of injuries, violence, and noncommunicable diseases (including mental disorders) ranging from infectious diseases. Over time, the prevalence of anemia in adolescent health has been high in many low-income countries, with anemia occurring in 40% of adolescent girls [39,40].

Identification and analysis of reproductive health is the main task of young people who have high hopes for society. At present, the protection of reproductive health of young people has a special character.

## MATERIALS AND METHODS

This work was conducted on the basis of a special survey of high school girls in Turkestan region, colleges and students of 1-3 courses in Akhmet Yassawi International Kazakh-Turkish university. The total number of girls is 5721. The design of the study used the method of population research of prospective cohorts.

The research is aimed at determining the impact of environmental factors on the somatic and reproductive health of adolescent girls living in the region, the features of the menstrual cycle, as well as the frequency and structure of the most common somatic diseases and dysmenorrhea. allowed to work with programs.

The examination was carried out in a separate booth for each girl and with their consent. The age of menarche was recorded according to the girl's words, and if possible, the exact day, month and year of arrival were recorded in full. These data were used to determine the average age of menarche in the study area. To diagnose vulvovaginitis, girls were interviewed for the presence, odor, type, and amount of discharge.

## RESULTS

In order to determine the indicators of reproductive health of adolescent girls living in the Turkestan region, 5721 girls aged 7-19 were

surveyed and analyzed. The average age of menarche in girls participated in experience is  $13.4 \pm 1.2$  years, the average height is  $153.3 \pm 1.3$  cm and the average weight is  $46.5 \pm 2.5$  kg.

The study aimed to investigate revealed the frequency and structure of extragenital pathology in girls and adolescent girls. In total, 4603 out of 5721 girls and adolescent girls have extragenital pathology (0.8 each), which indicates a low level of girls' health (about 20%). The incidence of vulvovaginitis among girls and adolescent girls living in the environmentally unfavorable

Turkestan region was 59%. In other words, one of two girls living in the Turkestan region has a violation of the vaginal biocenosis.

It has been found that pollution of soil and air with heavy metals has a negative impact on children's health. The topical hygienic problem of areas of high man-made pollution is the release of heavy metals into the environment. The eastern part of Turkestan is a widespread area of aerotechnogenic heavy metals. It accounts for 47% of the total amount of heavy metals in the city (Table 1.).

**TABLE 1:** Water levels and soil lead levels in Turkestan region

Place of Choice	Name of Indicators		
	Dry Residue mg /dm <sup>3</sup>	Lead mg /dm <sup>3</sup>	Zinc mg /dm <sup>3</sup>
Abai Secondary school, Turkestan	1020	0,005	0,009
Ataturk Secondary School, Turkestan	707	0,005	0,03
Otyrar district of Turkestan region	683	0,002	0,03
Turkestan Region, Iqan village	224	0,004	0,005
Kentau	185	0,002	0,1
Requirement for a regulatory document	1000	003	5,0
Assignment of a normative document to a methodical test	GOST 18164-72	GOST 18293-72	GOST 18293-72

Test conditions: temperature + 22.8 C ^ 0; relative humidity - 65%; atmospheric pressure- 764 mm. test column mm.

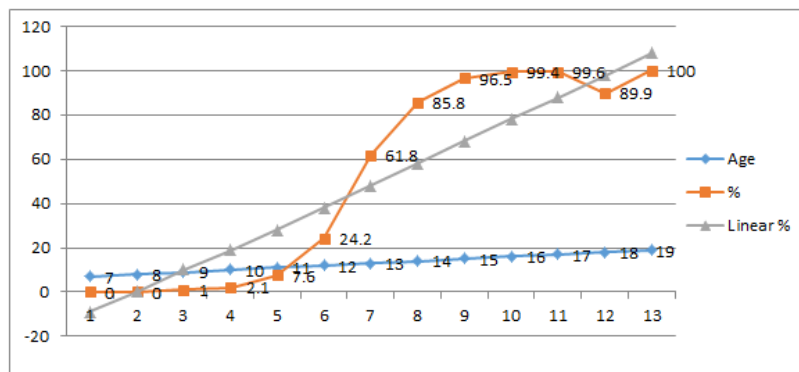
**Analysis**

Clinical and reproductive characteristics were performed among the studied girls and adolescent girls (Table 2).

**TABLE 2:** Clinical and reproductive characteristics of girls aged 7-19 years

Indicators	Average values M±m
Average age, year / month	14,6±5,1
Average weight, kg	48,4±9,8
Height	153,1±26,1
The Average Age at Menarche	13,2±1,2
Menstrual Cycle	4,8±1,4
Menstrual Interval	27,9±6,1

Figure 1 shows the percentage of certain age and menstrual activity among the girls in the study. This figure shows the correct linear trend.



**FIGURE 1:** Percentage of girls with menstrual function depending on age

Extragenital pathology occurred at different frequencies at different ages, 57.5% between the ages of 7-10, 68.8% between the ages of 11-13, 73.5% between the ages of 14-15, and 78.9% is between the ages of 16-19. Therefore, according to many literatures, the frequency of EGP increases with age [22,23]. The highest age in our

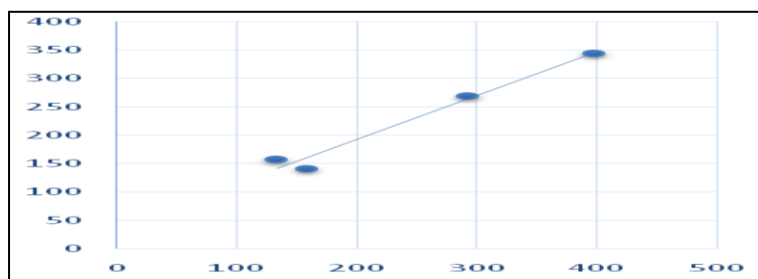
study was 16-19 years ( $\chi^2 = 79.9$ ;  $p = 0,000$ ). In each adolescent girl, multiple extragenital pathologies occurred in 42.1%. As a result of the study, the highest incidence of blood diseases was 43.70%, followed by respiratory diseases with a frequency of 18.10% and urinary tract diseases with a frequency of 14.80% (Table 3).

**TABLE 3:** Structural features of extragenital pathology

Extragenital Pathology	Amount	Percentage (%)
Diseases of the respiratory system	833	18,1
Diseases of the vascular system	471	10,2
Diseases of the digestive system	473	10,2
Blood diseases (anemia)	2013	43,7
Diseases of the endocrine system (thyroid gland)	137	3,0
Diseases of the urinary system	676	14,8
Total	4603	100

The somatic and reproductive health of adolescent girls are interrelated. Among the studied girls were menstrual disorders: dysmenorrhea 68%, hypomenstrual syndrome 19%, juvenile bleeding 15%, amenorrhea 4.5%. In the first place in the structure of the menstrual

cycle, dysmenorrhea is 68%, with 83.6% of extragenital pathology in adolescent girls. A strong correlation was found between the most common dysmenorrhea and extragenital pathology ( $r = 0.998$ ;  $p = 0.0001$ ) (Figure 2).



**FIGURE 2:** Linear correlation between extragenital pathology and dysmenorrhea

Dysmenorrhea is associated with pathology of the pelvic organs [28]. In addition, the severity of dysmenorrhea depends on age [29,30,31], especially in the early years of menarche [32,33], the length and volume of the menstrual cycle [32,33], as well as family history [34]. In our study, the marital status of girls and adolescents with dysmenorrhea was 2.9% with one child, 10.4% with two children, 20.5% with three children, and 66.2% with multiple children. Therefore, according to the literature, dysmenorrhea is more common in girls born in large families.

The incidence of dysmenorrhea in girls and adolescents between ethnic groups did not differ

significantly from the incidence of Kazakh and other nationalities. In the structure of gynecological diseases, the first place among girls and adolescent girls is 13.5-93%. ( $\chi^2 = 2.8$ ;  $p = 0.237$ )

A correlation was found between dysmenorrhea and the length of stay of girls in the ecological zone. Therefore, the longer you live in the ecological zone, the higher the incidence of dysmenorrhea ( $r = 0.273$ ;  $p = 0.0001$ ). A strong association between dysmenorrhea and extragenital pathology was found to be  $r = 0.998$ ;  $p = 0.0001$ . The incidence of dysmenorrhea is higher in girls with extragenital pathology (Table 4).

**TABLE 4:** Spear correlation between menstrual disorders and risk factors for its development

Indicator	Duration of residence of girls and adolescent girls in the ecological zone (years)	
Dysmenorrhea	$r = 0,273$	$p = 0,0001$
	Extragenital pathology	
	$r = 0,998$	$p = 0,0001$

Note:  $r =$  less than 0.3 - weak connection;  $r = 0.3-0.7$  average;  $r =$  more than 0.7 - strong bond

On average, one in two girls and adolescent girls in the ecologically disadvantaged Turkestan region has a normal vaginal biocenosis disorder. The incidence of vulvovaginitis was 57% among 5721 girls and adolescent girls, and the incidence of extragenital pathology was 78%. According to various authors, the incidence of vulvovaginitis varies from 35 to 93%.

Depending on the age of vulvovaginitis, the incidence was 35% in girls aged 10-12 years, 26.3% in girls aged 13-15 years, and 38.7% in girls aged 16-19 years. According to the results

of bacteriological studies to determine the frequency of pathogens of vulvovaginitis, the first place is occupied by *G.vaginalis* 49.7%, the second place is occupied by *Staphylococcus epid.* 18.9%, and in third place *C.albicans* was 7.8%.

Spearman’s study of the correlation between vulvovaginitis and ecologically unfavorable stay in Turkestan revealed that the longer and adolescent girls stay in Turkestan, the risk of developing vulvovaginitis is more higher (Table 5).

**TABLE 5:** Correlation between vulvovaginitis and length of stay in environmentally unfavorable areas

Indications	Vulvovaginitis	
	R	p
Unfavorable environmental duration of stay in the region (s) r		
1-3	$r = 0,3$	$p = 0,000$
4-5	$r = 0,5$	$p = 0,000$
5-10	$r = 0,7$	$p = 0,000$
More than 10 years	$r = 0,9$	$p = 0,000$

Note:  $r =$  less than 0.3 - weak connection;  $r = 0.3-0.7$  average;  $r =$  more than 0.7 - strong bond

It was found that girls with vulvovaginitis are twice as likely to have menstrual irregularities as healthy girls. This suggests that vulvovaginitis is associated with menstrual disorders,  $\chi^2 = 11,241$ ;  $p = 0,001$

### CONCLUSION

Adolescent girls living in environmentally unfavorable areas have a higher incidence of extragenital pathology, menstrual disorders and inflammatory diseases. At the same time a strong link between the duration of stay in the ecological zone and dysmenorrhea and extragenital pathology.

Based on the results of the study, we recommend conducting diagnostic criteria for vulvovaginitis and mandatory bacterioscopic examination of vaginal swabs in adolescent girls living in the Turkestan region. In addition, taking into account the ecological situation in the region and the social status of girls, we recommend a mass screening of adolescent girls for early detection of menstrual disorders.

To address this complex issue of environmental rehabilitation in the region, a state program with the participation of specialists in various fields should be adopted. One of the first steps to be implemented at the regional level with the support of the Ministry of Health is to improve the services of pediatric gynecology. Complex problems in the reproductive sphere of adolescent girls should be solved by specialists in various fields.

### ACKNOWLEDGEMENTS

We thank the management of secondary schools in the Turkestan region and the International Kazakh-Turkish University named after A.Yasawi.

### Information Statement

The authors did not report a potential conflict of interest.

### Financing

This work was supported by the Ministry of Science and Education of the Republic of Kazakhstan.

### Conflict of interest

The authors have no conflicts of interest associated with the material presented in this paper.

### Funding None

Author Contributions Conceptualization: YS, NG. Data curation: NG, AI. Formal analysis: NG. Funding acquisition: None. Methodology: NG, YS. Project administration: NG. Visualization: AI, NG. Writing – original draft: YS, NG, LP, ZK, AA, AN, AK. Writing – review & editing: YS, NG, AK, DO, GK, AI.

### REFERENCES

1. Marisa M. Fisher and Erica A. Eugster What are in our environment that effects puberty? //Reproductive Toxicology. – 2014- Vol. 44. P. 7–14. doi:10.1016
2. Hatami H, Razavi M, Eftekhari Ardabili H, Majlesi F. The textbook of public health. 3rd ed. Tehran: Arjomand publication; 2013. p. 238–40.
3. L'Engle KL, Mangone ER, Parcesepe AM, Agarwal S, Ippoliti NB. Mobile phone interventions for adolescent sexual and reproductive health: a systematic review. *Pediatrics*. 2016;138(3):e20160884.
4. Poteat VP, Russell ST, Dewaele A. Sexual health risk behavior disparities among male and female adolescents using identity and behavior indicators of sexual orientation. *Arch Sex Behav*. 2019;48(4):1087–97.
5. R.W. Blum, K. Mmari, C. Moreau It begins at 10: How gender expectations shape early adolescence around the world *J Adolesc Health*, 61 (4S) (2017), pp. S3-S4
6. Centers for Disease Control and Prevention. STDs in Adolescents and Young Adults. 2017. <https://www.cdc.gov/std/stats17/adolescents.htm> . Accessed 19 Jan 2020.
7. Centers for Disease Control and Prevention. Sexually transmitted diseases. Washington: Centers for Disease Control and Prevention. 2014. <http://www.cdc.gov/std//STDFact-Chlamydia.htm>. Accessed 19 Jan 2020.

8. Flowers P, Barber T, BSocStud, HW, Nelson M, Hedge B, Fakoya A, Sullivan AK. Review of the evidence for the UK national guidelines on safer sex advice. The Clinical Effectiveness Group of the British Association for Sexual Health and HIV (BASHH) and the British HIV Association (BHIVA). 2012. Accessed 19 Jan 2020. <https://www.semanticscholar.org/paper/Review-of-the-evidence-for-the-UK-national-on-safer-Flowers-Barber/56882c62104fe07197cea5219930f11b25088dcf>
9. Sully EA, Atuyambe L, Bukonya J, Whitehead HS, Blades N, Bankole A. Estimating abortion incidence among adolescents and differences in postabortion care by age: a cross-sectional study of postabortion care patients in Uganda. *Contraception*. 2018;98(6):510–6.
10. Moni SA, Nair MK, Devi RS. Pregnancy among unmarried adolescents and young adults. *J Obstetrics Gynecol India*. 2013;63(1):49–54.
11. Adamyan L. V., Sibirskaya E. V., Bogdanova E. A., Koltunov I. E. and other Reproductive health of girls and girls in Moscow. Proposals for the preservation of reproductive potential // *Reproduct. Health of children and adolescents*. 2016. No. 2. P. 13-14.
12. Uvarova E.V., Tarusin D.I., Kuchma V.R., Sukhareva L.M. and other Prevention of reproductive health disorders in children and adolescents // *Vopr. school and university medicine and health*. 2018. No. 2. P.45-62.
13. Utochkin Yu.A., Vysotin S.A., Sayfitova A.T., Ochkova A.A. and other Assessment of the awareness of senior pupils about the risks of reproductive health // *Intern. student scientific. vestn*. 2019.No. 1.P. 12.
14. Semchenko L.N., Gerasimova O.Yu. Reproductive behavior of adolescents and the leading risk factors shaping their reproductive health // *Continuous medical education and science*. 2017.Vol. 12, No. 2. P. 34–35.
15. Vorobieva E.A., Kocherova O.Yu., Pykhtina L.A., Filkina O.M. and other Features of morbidity and physical development of adolescents 15–17 years old with different rates of puberty // *Vestn. new medical technologies*. 2007. V. 14, No. 2. P. 54–56.
16. A. N. Pavlova 1, V.I. Makarova 2 The state of health of adolescents living in an ecologically unfavorable area ISSN 2409-563x. *medicus*. 2015. No. 3 (3). Centers for Disease Control and Prevention. *STDs in Adolescents and Young Adults*. 2017.
17. Yastrebov G.G., *Life Safety and Medicine catastrophes: textbook. allowance. - M.: Ed. 9th, 2014. -- 414 p.*
18. Onishchenko G.G., Zaitseva N.V., May I.V. and others Health risk analysis in strategies of state socio-economic development; under total.ed. G.G. Onishchenko, N.V. Zaitseva // Perm: Publishing house of Perm. nat. issled. polytechnic University, 2014. -- 738 p.
19. Abilhas, A. A. Problems of reproductive health among youth and adolescents [Text] / A. A. Abilhas, N. M. Apen, A. G. Shamsutdinova et al. // *International Journal of Applied and Fundamental Research*. - 2016. - No. 8-4. - S. 519 - 521.
20. Chen, Y. Update on pubertal development among primary school students in Shanghai [Text] / Y. Chen, Y. T. Zhang, C. Chen et al. // *Zhonghua Yu Fang Yi Xue Za Zhi*. – 2016. – №50 (11). – P.971 – 975..
21. Avni Amin, Venkatraman Chandra-Mouli Empowering adolescent girls: developing egalitarian gender norms and relations to end violenc // *Reproductive Health*.- 2014. – Vol.5. - P.11:75
22. Shilova, O. Yu. Features of the physical and sexual development of adolescent girls in modern conditions [Text] / O. Yu. Shilova // *Siberian Bulletin of Special Education*. - 2015. - No. 2. - S. 120 - 124.
23. Avni Amin, Venkatraman Chandra-Mouli Empowering adolescent girls: developing egalitarian gender norms and relations to end violenc // *Reproductive Health*. 2014. Vol. 5. - P.11: 75
24. Globalnaya strategiya sektora zdavookhraneniya po infektsiyam, peredavaemym polovym putem 2016–2021 na puti k likvidatsii IPPP [Global health sector strategy on sexually transmitted infections 2016-2021 towards the elimination of STIs]. *VOZ*, 2016; 64.
25. Globalnoe issledovanie zdorovya shkolnikov, Tadjikistan 2006 [A global study of the health of pupils, Tajikistan 2006]. Dushanbe, Tadjikistan, 2006; 34.
26. Serov V.N., Sukhikh G.T. Unwanted pregnancy and forced abortion: modern methods of abortion. In *obstetrics and gynecology: Clinical guidelines*. M. ; 2014: 627—607
27. Azzopardi PS, Hearps SJC, Francis KL, et al. Progress in adolescent health and wellbeing: Tracking 12 headline indicators for 195 countries and territories, 1990e2016. *Lancet* 2019;393:1101e18.
28. V. Gangwar, D. Kumar, R. Gangwar, R. Gangwar, M. Arya, H. Banoo, Prevalence of primary dysmenorrhea among the undergraduate medical students and its impact on their performance in study, *Int. J. Physiol*. 2 (1) (2014) 14–18.
29. S. Pullon, J. Reinken, M. Sparrow, Prevalence of dysmenorrhoea in Wellington women, *N Z Med. J*. 101 (839) (1988) 52–54.
30. K. Messing, M.J. Saurel-Cubizolles, M. Bourguine, et al., Factors associated with dysmenorrhea among workers in French poultry

- slaughterhouses and canneries, *J. Occup. Med.* 35 (5) (1993) 493–500.
31. G. Sundell, I. Milsom, B. Andersch, Factors influencing the prevalence and severity of dysmenorrhoea in young women, *Br. J. Obstet. Gynaecol.* 97 (7) (1990) 588–594.
  32. G.D. Mishra, A.J. Dobson, M.J. Schofield, Cigarette smoking, menstrual symptoms and miscarriage among young women, *Aust. N Z J. Public Health* 24 (4) (2000) 413–420.
  33. T.P. Ng, N.C. Tan, G.K. Wansaicheong, A prevalence study of dysmenorrhoea in female residents aged 15–54 years in Clementi Town, Singapore, *Ann. Acad. Med. Singapore* 21 (3) (1992) 323–327.
  34. N. Parveen, R. Majeed, U.D.M. Rajar, Familial predisposition of dysmenorrhea among the medical students, *Pak. J. Med. Sci.* 25 (5) (2009) 857–860.
  35. V. B. Rystygulova The deformation problem of a circular elastic flexible plate under variable load January 2014 *Mechanika* 19(6) DOI: 10.5755/j01.mech.19.6.6013
  36. Tuktibayeva S.A., Kemelbekov K.S., Baimakhanova B.B., Mustafina K.A., Jumabekov J.K., Bekenov N.N. Modern Assessment of correlation interconnection in childrens morbidity and dangerous factors in the Turkestan region // *Annals of Tropical Medicine and Public Health.*-2019.-№1.-P.S805-18. ISSN 1755-6783
  37. Tuktibaeva S. A., Buleshov M. A., Abdrakhmanova Z. B., Mustafina K. A., Buleshova a.m., Ivanov S. V., Kalmakhanov S. B., grzhibovsky a.m. incidence of child injuries in the South Kazakhstan region of the Republic of Kazakhstan in 2012-2016 // *Human ecology.* 2018. No. 11. Pp. 4-9. ISSN 1728-0869
  38. Buleshov M.A., Atymbetova N., Buleshova A. M., Tuktibaeva S.A. Features of immunological and nonspecific reactivity of the organism, clinical flow of chronic obstructive bronchitis based on the estimation of quality and quantitative composition of microelements (me) in the blood // *Revista Latinoamericana de Hepertension.*-2019- Vol.14-№ 4. P.265-269. ISSN 1856-4550
  39. Tuktibayeva S.A., M. A. Buleshov, A. M. Buleshova, A. A. Zhakyslyk, B. O. Ashirov, A. K. Ilimova, U. Yu. Chulpanov Scientific substantiation of medico-social prevention of digestive diseases in schoolchildren on the basis of the prediction table // *Electronic Journal of General Medicine.*-2019;16(6):em180 ISSN:2516-3507
  40. Tuktibayeva S.A., M. A. Buleshov, D. M. Buleshov, Zh. A. Yermakhanova, T. B. Dautov, S. N. Alipbekova, A. M. Buleshova The choice of treatment for myocardial infarction based on individual cardiovascular risk and symptoms of coronary heart disease // *Electronic Journal of General Medicine.*-2019;16(6):em183 ISSN:2516-3507