

## ЭПИДЕМИОЛОГИЧЕСКИЕ ХАРАКТЕРИСТИКИ ВРОЖДЕННЫХ РАСЩЕЛИН ВЕРХНЕЙ ГУБЫ И НЕБА В РАЗНЫХ СТРАНАХ МИРА (ОБЗОР ЛИТЕРАТУРЫ)

Хатамов У.А.<sup>1</sup>, Туйчибаева Д.М.<sup>2</sup>

<sup>1,2</sup>Ташкентский государственный стоматологический институт

<sup>1</sup>[hatamovulugbek@yahoo.com](mailto:hatamovulugbek@yahoo.com), ORCID ID:0000-0001-8466-3036

<sup>2</sup>[dyly@mail.ru](mailto:dyly@mail.ru), ORCID ID: 0000-0002-9462-2622

### АННОТАЦИЯ

В данной статье представлен литературный обзор распространённости и рождаемости детей с врождённой расщелиной верхней губы и нёба (ВРВГН) в различных странах мира. С этой аномалией рождается один ребёнок из 1000 новорождённых, что составляет примерно 0,04% от общей численности населения планеты. Доказано, что ВРВГН среди стоматологических заболеваний, остаются на ведущих позициях, занимая 3-4 место среди врожденных аномалий. Их распространённость находится в диапазоне от 11,4% до 80%. Следовательно, требуется дальнейшая разработка методов и подходов предотвращения распространённости ВА ЧЛЮ, повышение качества комплексной медико-социальной реабилитации детей с данной патологией и их родителей, и, на наш взгляд, данная проблема должна быть вынесена на одно из первых мест для системы здравоохранения всего мира.

**Ключевые слова:** врожденной расщелине верхней губы и неба, зубочелюстные аномалии, распространённость, рождаемость, дети.

## EPIDEMIOLOGICAL CHARACTERISTICS OF CONGENITAL CLEFT LIP AND PALATE IN DIFFERENT COUNTRIES OF THE WORLD (LITERATURE REVIEW)

Khatamov U.A.<sup>1</sup>, Tuychibaeva D.M.<sup>2</sup>

<sup>1,2</sup> Tashkent State Dental Institute

<sup>1</sup>[hatamovulugbek@yahoo.com](mailto:hatamovulugbek@yahoo.com), ORCID ID:0000-0001-8466-3036

<sup>2</sup>[dyly@mail.ru](mailto:dyly@mail.ru), ORCID ID: 0000-0002-9462-2622

## ABSTRACT

This article presents a literature review of the prevalence and birth rate of children with congenital cleft lip and palate (CCLP) in various countries of the world. With this anomaly, one child out of 1000 newborns is born, which is approximately 0.04% of the total population of the planet. It has been proven that CCLP among dental diseases remains in the leading positions, taking 3-4th place among congenital anomalies. Their prevalence ranges from 11.4% to 80%. Therefore, further development of methods and approaches is required to prevent the prevalence of congenital anomalies of the maxillofacial region, improve the quality of the comprehensive medical and social rehabilitation of children with this pathology and their parents, and, in our opinion, this problem should be placed in one of the first places for the system health care throughout the world.

**Key words:** congenital cleft lip and palate, dentoalveolar anomalies, prevalence, birth rate, children.

Congenital malformations are one of the most pressing medical and social problems due to their high frequency and severity of the disease and poor outcome [28,29]. When considering the varieties of congenital anomalies of the maxillofacial region, the 3rd-4th place belongs to the congenital cleft lip and palate (CCLP), leading in terms of severity of both functional and anatomical disorders, which indicates the relevance of the problem in dentistry and maxillofacial surgery [11,15,22].

An analysis of foreign and domestic literature showed an increasing interest in this malformation, which is undoubtedly associated with its high prevalence and multifactorial nature.

CCLP, in terms of its prevalence and disability, occupies one of the leading places among congenital defects in the development of the maxillofacial region [27]. According to the World Health Organization, "... the birth rate of patients with clefts in the world is 0.6-1.6 per 1000 newborns. In the group of human congenital malformations, CCLP accounts for 12 to 30% and tends to increase the frequency of this anomaly..." [31].

According to modern literature, today there is a lot of information about the frequency of birth of children with CCLP, however, this indicator in different countries and regions varies within different limits. With varying frequency, CCLP occurs in all nations and nationalities [1]. The highest frequency is found among American Indians (from 0.79 to 3.4 per 1000), followed by the Japanese and Chinese (from 0.85 to 2.68 per 1000). For European peoples, a lower frequency is characteristic (from 0.91 to 2.51 per 1000), for the Negroid race - the lowest (from 0.18 to 1.77 per 1000) (according to the material of the thesis. Yakovleva S.V., 2000). Thus, the birth of a child with CCLP

is: in Hong Kong, Singapore, Santiago - 1.4 - 1.6 per 1000, in Bogotá, Melbourne, Belfast - 0.9 - 1.3 per 1000; the average figure in Europe is 1:500 - 1000, in the USA - 1:600, on the African continent - 1:2440 [10,11,13,18,21,30]. The frequency of the considered anomaly in Shanghai reaches 1.2 per 1000 newborns, in the Philippines - 1.5 per 1000 live births, in Japan there are 2 cases per 1000 infants [7]. Abualfaraj R et al (2017) showed that in Europe the number of patients with CCLP has doubled over the past 40 years [2].

The highest birth rate of children with this pathology was in Czechoslovakia (1.81/1000), France (1.75/1000), Finland (1.74/1000), Denmark (1.69/1000), Belgium and the Netherlands (1.47/1000) , in Italy (1.33/1000), in California (USA) (1.12/1000), in South America (1.0/1000).

In Russia, the birth rate of children ranges from 1:630 to 1:1280 [22,25,30]. An epidemiological assessment of CVLP in the Republic of Sakha (Yakutia) over the past 13 years was carried out by a team of authors from the North-Eastern Federal University. M.K. Ammosov (Yakutsk) and the Far Eastern State Medical University (Khabarovsk) [30]. The conducted retrospective analysis showed that the data on the birth of children with CCLP during the surveyed period ranged from 13 to 40 registered cases per year, and the frequency rate was 1 case per 752 newborns. For comparison: the frequency in the Kirov region is 1:1078, or 0.92 per 1000 newborns, in the Orenburg region - 1:850 (1.18), in the Vladimir region - 1:700 (1.42), in the Lipetsk region - 1: 800 (1.25) [9].

The frequency of birth of children with CCLP according to Ad.A. Mamedova, G.I. Ochnevoy (2001) for the Orenburg region is approximately 1 in 700 - 750.

The prevalence of CCLP in the Lipetsk region was 1:566 in 2000 and 1:800 in 2003. The frequency of births of patients with congenital cleft lip and palate is higher in the districts of the region than in the city of Lipetsk. 44% of children with congenital cleft lip and palate are rural residents, 25% are residents of district centers. During the period from 1994 to 2004, 90 children with congenital cleft lip and palate were born in the region, of which 23% were children with congenital cleft lip; 33% - with congenital unilateral cleft lip and palate; 10% - with congenital bilateral cleft lip and palate; 33% are children with congenital cleft palate [26].

According to L.E. Frolova et al., (1986), S.V. Belyakova et al., (1996) in Moscow for 1979-93. this pathology ranged from 0.60 to 1.17 per 1000 newborns, according to V.I. Ismailova et al. (1996) in the Volgograd region - 1:745 newborns. According to 3.0. Vadachkoria (1996) prevalence of CCLP in the Republic of Georgia in 1981-1990. was 1.05 per 1000 newborns.

In Russia, the number of congenital anomalies has increased, especially after the accident at the Chernobyl nuclear power plant in 1986 (B.Ya. Reznik, 1990, V.V.

Vertai, 1991; Yu. Korneev, 1992; N.N. Vaganov, 1994; Mamedov Ad.A. ., Varfolomeeva L.G., 2002; M. Drennen, Lancet 1990). According to the scientific work of LG Varfolomeeva, the predicted increase in the number of births of children in the Tula region with congenital anomalies of the maxillofacial region is associated with the living conditions of parents in the zone with an increased level of radiation on its territory after the Chernobyl accident. So from 1993 to 2001, their number increased from 0.853 to 1.166 per 1000 live births. Most children with CCLP are born in warm spring (1.5%) and autumn (1.3%) seasons. In summer (0.8%) and winter (1%), children with CCLP are born less frequently.

Every year, per 1000 newborns, the birth of children with congenital anomalies of the maxillofacial region also increases by a quarter in the Republic of Belarus. Scientists attribute this to the Chernobyl accident, where 20% of the land is still contaminated with long-lived radionuclides [4].

However, according to Z.A. Nureeva (1989), this is apparently due to both the actual and numerically established increase in the frequency of pathology, and the improvement in the quality of its registration and accounting. Among the causes of perinatal pathology, special attention is drawn to the increase in the proportion of hereditary factors, which, on the one hand, is associated with a real change in the structure of perinatal pathology, and on the other, with an improvement in the diagnosis of its hereditarily conditioned forms.

For the period 2010-2016 in the city of Volgograd and the Volgograd region, the frequency of congenital anomalies was 1:630, or 1.6 per 1000 live births. Moreover, in industrial areas, the frequency of congenital anomalies was significantly higher than in rural areas. Left-sided clefts accounted for 68.7%, and right-sided - 31.3%. In boys, pathology was 2.5 times more common than in girls (71.01% and 28.89%, respectively) [3].

According to Chuikin S.V. et al. (2018) "...annually the number of newborns with CCLP increases by 1.38 for every 100 thousand of the population, and data are given on the prevalence of CCLP in children of the Krasnoyarsk Territory, Kirov Region, Tatarstan, Khabarovsk Territory and other subjects of the Russian Federation..." [8].

Comprehensive epidemiological studies of the prevalence of children with CCLP in various subjects of Russia, Uzbekistan, Kazakhstan and Poland indicate an increase in the number of newborns with congenital anomalies of the maxillofacial region and predict a twofold increase in this pathology compared to the beginning of the 20th century [5,6,11,12, thirty]. This forecast is also confirmed by the fact that every year for every 100 thousand of the population, the birth rate of children with congenital cleft lip and palate (CCLP) increases by 1.38 times [12].

According to the statistics for the Republic of Kazakhstan, the frequency of birth of children with congenital anomalies of the maxillofacial region in the country remains high and amounts to 1:880. More than 6,000 children are registered with the dispensary, and about 400 children are born with this pathology every year [24].

In Uzbekistan, the prevalence of CCLP according to Amanullaev R.A. (2005) account for 1 case per 745 live births, and in the territory of the Aral region 1: 540 [3].

According to A.Sh. . The authors of the article consider it important to touch upon the problem of risk factors in the occurrence of CCLP and come to the conclusion that "... the main teratogenic factors contributing to the development of congenital pathology of the maxillofacial region of the fetus in women are: environmentally unfavorable factors (25.8%), aggravated infectious anamnesis (22.04%), hereditary burden (15.05%), influence of drugs with teratogenic effect (16.1%), influence of combined teratogenic factors (21.0%). Among children with CCLP in the Bukhara and Navoi regions, the most severe forms prevailed - clefts of the upper lip, alveolar process, hard and soft palate..." [17].

Kasimovskaya N.A. (2020) also emphasizes that various biomedical, environmental and social factors can act as determinants of risk. Thus, 38.1% of the examined women noted the use of antibiotics, salicylates, sulfanilamide and other pharmacological agents in the first trimester of pregnancy [19].

**Conclusion.** Thus, a close study of the frequency and etiology of cleft lip and palate is a priority, as it allows to effectively address the issues of their prevention [20]. In this regard, monitoring the birth rate of children with CCLP and determining epidemiological indicators in dynamics becomes one of the necessary initial components for solving problems related to the optimization of surgical treatment, prevention and rehabilitation of children with CCLP. Research in this area is urgently needed. Despite the successes of modern maxillofacial surgery, treatment, prevention and elimination of postoperative complications remain an urgent issue [14,23,32]. Therefore, further development of methods and approaches is required to prevent the prevalence of congenital anomalies of the maxillofacial region, improve the quality of the comprehensive medical and social rehabilitation of children with this pathology and their parents, and, in our opinion, this problem should be placed in one of the first places for the system health care throughout the world.

## REFERENCES

1. Abdurakhmonov A.Z., Subkhanov S.S., Postnikov M.A., et al. Combined measures and rehabilitation of patients with unilateral cleft lip and palate before and after surgery // Bulletin of the Medical Institute "REAVIZ". Rehabilitation, doctor and health. - 2018. - No. 3. - P. 97–106.



2. Abualfaraj R., Daly B., McDonald F, Scambler S. Cleft lip and palate in context: Learning from, and adding to, the sociological literature on long term conditions. *health*. 2018; 22(4): p.372-8, <https://doi.org/10.1177%2F1363459317693409>.
3. Amanullayev R.A. Chastota rozhdayemosti detey s vrozhdennoy rasshchelinoy verkhney guby i noba v krupnykh regionakh Uzbekistana // Vrozhdennoy patologiya golovy, shei i litsa u detey: aktual'nyye voprosy kompleksnogo lecheniya: Materialy II Vserossiyskoy nauch.-prakticheskoy konf., g. Moskva, 19–21 aprelya 2006. – Moskva, MGMSU, 2006. –, pp. 14–15.
4. Artyushkevich A.S., Grichanyuk D.A., Vismont F.I., Artyushkevich S.A. Vrozhdonnyye rasshcheliny verkhney guby i noba: sovremennyye aspekty khirurgicheskogo lecheniya. *Sovremennaya stomatologiya*. 2004;2 – pp. 20-5.
5. Barillas I, Dec W, Warren SM, Cutting CB, Grayson BH. Nasoalveolar molding improves long-term nasal symmetry in, complete unilateral cleft lip-cleft palate patients. *Plast Reconstr Surg*. 2009;123(3): pp.1002-6.
6. Bull HG, Lenzen C. Differential diagnosis and treatment of cheilognathopalatoschises. *Zentralbl Gynekol*. 2003;125(10): pp.398-403.
7. Cebron U., Zuo K.J., Kasrai L. A bibliometric analysis of the most cited articles in global reconstructive surgery. *Ann Plast Surg*. 2019;83(3): p. 334-9.
8. Chuykin S.V., Topol'nitskiy O.Z., Persin L.S. Vrozhdonnaya rasshchelina verkhney guby i noba: monografiya. Moskva, RF: LAP Lambert Academic Publishing; 2018. - pp. 592.
9. Dolgopolova G.V. Ranneye ortopedicheskoye lecheniye detey s vrozhdennoy rasshchelinoy guby, al'veolyarnogo otrostka i neba: Avtoref. dis. ... kand. med. nauk. Yekaterinburg 2003; pp.31.
10. Egorova MV, Karachunsky GM, Amkhadova MA, Nikitin AA, Filatova EV. Rannaya kompleksnaya reabilitatsiya detey s polnymi rasshcheliniami verkhney guby, al'veolyarnogo otrostka i nyoba [Early complex rehabilitation of children with complete clefts of the upper lip, alveolar ridge and palate]. *Stomatologiya detskogo vozrasta i profilaktika*. 2010;4: pp. 14-8
11. Felton M., Lee J.W., Balumuka D.D., Arneja J.S., Chadha N.K. Early placement of ventilation tubes in infants with cleft lip and palate: A systematic review. *Otolaryngol Head Neck Surg*. 2018;158(3):459-64. Available from: <https://doi.org/10.1177/0194599817742840>.
12. Fomenko I.V., Kasatkina A.L., Timakov I.Ye, Mel'nikova D.V., Mel'nikov P.YU. Epidemiologicheskiye aspekty vrozhdonnykh porokov chelyustno-litsevoy oblasti u detey Volgogradskoy oblasti za 2010-2016 gody. *Stomatologiya detskogo vozrasta i profilaktika*. 2018;17(3) – pp. 58-61.

13. Fomenko IV, Filimonova EV, Kasatkina AL, Kraevskaya NS. Otsenka kachestva zhizni detey s vrozhdyonnoy odnostoronney rasshchelinoy verkhney guby i nyoba v zavisimosti ot metoda plastiki defekta nyoba po rezul'tatam anketirovaniya roditeley patsientov [Assessment of the quality of life of children with congenital unilateral cleft of the upper lip and palate, depending on the method of plastic defect of the palate, based on the results of questioning the parents of patients]. Stomatologiya detskogo vozrasta i profilaktika. 2016;15(1):20-2.

14. Hong M, Baek SH. Differences in the alignment pattern of the maxillary dental arch following fixed orthodontic treatment in patients with bilateral cleft lip and palate: Anteroposterior-collapsed arch versus transverse-collapsed arch. J Craniofac Surg. 2017;29(2): pp.440-4, <https://doi.org/10.1097/SCS.0000000000004140>.

15. Ignatieva OV, Krasnov MV, Anokhina AV. Vrozhdyonnye rasshcheliny verkhney guby i nyoba u detey v Chuvashskoy Respublike i optimizatsiya ikh lecheniya [Congenital clefts of the upper lip and palate in children in the Chuvash Republic and optimization of their treatment]. Acta Medica Eurasica. 2015;3:16-22

16. Inoyatov A.Sh., Mukimov I.I., Gafarova S.U. Clinical characteristics of children with congenital malformations of the maxillofacial region. Bulletin of the Council of Young Scientists and Specialists of the Chelyabinsk Region. 2016;1(2) - pp. 11-4.

17. Inoyatov A.SH. Faktory riska rozhdeniya, vidy rasshcheliny guby i neba u detey s porokami chelyustno-litsevoy oblasti / A.SH. Inoyatov, G.SH. Zamonova // Nauchnaya diskussiya: innovatsii v sovremennom mire: sb. st. po materialam LII Mezhdunarodnoy nauchno-prakticheskoy konferentsii «Nauchnaya diskussiya: innovatsii v sovremennom mire». – № 8(51). – M., Izd. «Internauka», 2016. - pp. 91-96.

18. Inoyatov ASh, Rahmatov DS. Improving the prevention and treatment of dental caries in children. New day in Medicine. 2020;2: pp. 372-4.

19. Kasimovskaya N.A., Shatova Ye.A. Vrozhdonnaya rasshchelina guby i noba u detey: rasprostranonnost' v Rossii i v mire, gruppy faktorov riska. Voprosy sovremennoy pediatrii. 2020; 19(2) - p.142-5. <https://doi.org/10.15690/vsp.v19i2.2107>.

20. Korolenkova M.V., Starikova N.V., Udalova N.V. The role of external aetiological factors in dental anomalies in non-syndromic cleft lip and palate patients. European Archives of Pediatric Dentistry. 2019;20(2): p.105-11.

21. Mamedov AA, McLennan AB, Ryabkova MG, Donin IM, Volkov YO, Parfyonov DS, i dr. Mezhditsiplinarnyy podkhod k lecheniyu detey s rasshchelinoy guby i nyoba v periode novorozhdyonnosti [An interdisciplinary approach to the treatment of children with cleft lip and palate in the neonatal period]. Sistemnaya integratsiya v zdravookhraneni. 2017;2:52-9.

22. Mardanov AE, Mamedov AA, Ragimov AA, Dashkova NG, Matveev AV. Obosnovanie khirurgicheskogo vmeshatel'stva u detey s rasshchelinoy guby i nyoba v periode novorozhdyonnosti [Rationale for surgical intervention in children with cleft lip and palate in the neonatal period]. *Stomatologiya dlya vsekh*. 2017;4:42-7.

23. Musakhodjaeva D, Sharopov S, Inoyatov A. Proinflammatory cytokines in children with congenital cleft lip and palate. *European Journal of Immunology*. 2019;49: pp.131-1.

24. Negametzyanov N.G. Ekologicheskiye faktory razlichnykh regionov Respubliki Kazakhstan i ikh vliyaniye na zabolevayemost' vrozhdonnoy rasshchelinoy verkhney guby i noba. *Stomatologiya detskogo vozrasta i profilaktika*. 2012;11(1) – pp. 21-8.

25. Stepanova YV, Tsyplakova MS, Usol'tseva AS, Yenukashvili NI, Bagayeva VV, Semonov MG, i dr. Ispol'zovaniye kletochnykh tekhnologiy pri lechenii detey s vrozhdonnymi rasshchelinami noba. *Ortopediya, travmatologiya i vosstanovitel'naya khirurgiya detskogo vozrasta*. 2017;5(4): pp.31-7.

26. Sutulov V.V. Okazaniye spetsializirovannoy pomoshchi detyam s vrozhdennoy rasshchelinoy guby i neba v sovremennykh usloviyakh razvitiya zdravookhraneniya (na primere Lipetskiy obl.) Nauchnaya rabota. Tver', 2006.

27. Taalaybekov N.T., Yeshiyev A.M. Statistika rozhdayemosti detey s vrozhdennymi porokami razvitiya i ispol'zovaniye sovremennykh tekhnologiy v reabilitatsii // *Molodoy uchenyy*. – 2016. – № 3. – P. 310-312.

28. Tuychibaeva D.M. Main Characteristics of the Dynamics of Disability Due to Glaucoma in Uzbekistan // "Ophthalmology. Eastern Europe", 2022;12.2:195-204. (in Russian)]. <https://doi.org/10.34883/PI.2022.12.2.027>.

29. Tuychibaeva D.M. Longitudinal changes in the disability due to glaucoma in Uzbekistan // *J.ophthalmol.(Ukraine)*. 2022;507.4:12-17. <http://doi.org/10.31288/oftalmolzh202241217>.

30. Ushnitskiy I.D., Isakov L.O., Vinokurov M.M., Oskol'skiy G.I. Dinamicheskiy analiz chastoty struktury vrozhdennykh anomalii chelyustno-litsevoy oblasti v Yakutii // *Stomatologiya*. – 2015. – T. 94. – № 2. – pp. 37–39, <https://doi.org/10.17116/stomat201594237-39>

31. WHO [webpage on the Internet] Birth defects surveillance. A manual for program managers. Geneva: World Health Organization; 2020. License: CC BY-NC-SA 3.0 IGO <https://apps.who.int/iris/handle/10665/337425>.

32. Więckowska B., Materna-Kiryluk A., Wiśniewska K., Kossowski T., Latos-Bieleńska A. The detection of areas in Poland with an increased prevalence of isolated cleft lip with or without cleft palate. *An Agric Environ Med*. 2015;22(1) – C.110-7.