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Modern views in the clinic and diagnosis of bruxism. (Review)

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Abstract: The functional states of the masticatory muscles are interrelated with the general states of the muscular systems and the whole organism as a whole. An increase in muscle-strength contractions during pathological tooth abrasion violates the compensatory-protective abilities of the dental-maxillary system, while the functional balance is disturbed, phenomena and features of active bruxism appear, all this is a key mechanism for the development of pathology.

Key Words:

Summary

The functional states of the masticatory muscles are interrelated with the general states of the muscular systems and the whole organism as a whole. An increase in muscle-strength contractions during pathological tooth abrasion violates the compensatory-protective abilities of the dental-maxillary system, while the functional balance is disturbed, phenomena and features of active bruxism appear, all this is a key mechanism for the development of pathology.

An increase in muscle-strength contractions during pathological tooth abrasion violates the compensatory-protective abilities of the dental-maxillary system, while the functional balance is disturbed, phenomena and features of active bruxism appear, all this is a key mechanism of temporomandibular joint dysfunction (TMJ). It is imperative to diagnose at a dentist's appointment, since bruxism often occurs latently [13,14,].

An increase in muscle-strength contractions during pathological tooth abrasion violates the compensatory-protective abilities of the dental-maxillary system, while the functional balance is disturbed, phenomena and features of active bruxism appear, all this is a key mechanism of temporomandibular joint dysfunction (TMJ). It is imperative to diagnose at a dentist's appointment, since bruxism often occurs latently [10,14,].

Gaidarova T.A. in 2003, in her works, she revealed the main signs of bruxism: spalling of the restoration or tooth breakage, relatively moderate, non-critical recession of the gums, the presence of pathological abrasion and mobility of the tooth or several teeth, an increase in the maxillary and mandibular ridges, hypertrophied masticatory muscles, dental prints on the tongue, difficulty mouth opening [7].

Many patients with sleep bruxism (BS) have no obvious pathological clinical signs or symptoms, despite the fact that it is manifested by unregulated muscle activity with very large muscle-strength contractions [2,5].

In order to make an accurate diagnosis of the disease, a strict anamnesis collected bit by bit is necessary. For this, Professor Slavichek developed a special primary diagnostic questionnaire, which examines the general medical condition, dental status and muscle condition during palpation. Responses to the degree of discomfort were assessed on a three-point scale when determining the patient's dental status using a special questionnaire. This individual analysis contributes to the determination of the intensity of frustration in the subjects [26].

Trezubov V.N. In 2005, in his works on the study of neuromuscular disorders in patients with disorders of the temporomandibular joint, complicated by parafunctions of masticatory muscles, he argued that when collecting an anamnesis, it is necessary to establish an individual nexus with patients, and it is necessary to question them in a good-natured warehouse. Painful areas of masticatory, temporal and other muscles are determined when filling out palpation maps [29].

Lebedenko I.Yu. and co-authors in 2007, studying the diagnosis, planning and treatment of disorders of occlusion of the dentition with TMJ, found that the duration of compression, fissure-tubercle friction are the

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triggering mechanism for the occurrence of facial muscle pain phenomena, which leads to increased sensitivity in this area of the skin [10].

Pisarevsky Yu.L. In 2010, in his work on the study of the features of diagnosis and treatment of patients with dentoalveolar anomalies complicated by diseases of the temporomandibular joints, he noted that bruxism is often accompanied by increased compression of the masticatory, temporal, and medially pterygoid muscles, leading to tension, whitish sensations, inconvenience in the area of these muscles, reduced performance [23].

Farella M. et al. In 2010, in their research, they noted that female bruxism creates a feeling of fatigue, muscle soreness in palpable muscles, especially in the masticatory and temporal muscles [35].

Abe S. et al 2007 in their article “Tooth wear in young subjects: a differentiator between sleep disturbers and controls?” argued that not all subjects with BS have muscle pain. Myofascial pain syndrome (MBS) of the facial area can be observed, with or without parafunction [28].

M.C. Carra et al. 2011 in her article "Prevalence and risk factors for sleep bruxism and clenching of teeth during wakefulness in the population aged 7 to 17 years" indicated that BS coordinated against the background of a stress factor is accompanied by muscle pain due to overload, with a maximum peak of pain falls on the period of awakening from sleep [22].

Abe S. et al. A 2009 study of tooth wear in young subjects showed a distinguishing feature between sleep disturbers and the control group, during which it turned out that not all subjects with BS recurring every night had muscle pain symptoms. The author connects this phenomenon with the adaptive ability of muscles to daily repeated overloads [14].

Onopa E.N. In 2002, he analyzed the results of a comprehensive examination of patients aged 30 to 60 years with musculo-articular dysfunction and identified a large percentage of BS grouped with TMD [2].

Трезубов В.Н. 2005 году изучил нейромышечные нарушения у больных с расстройствами височно-нижнечелюстного сустава, осложненных парафункциями жевательных мышц, после чего так же сделал вывод ,что большой процент БС группирован с ДВНЧС [15].

Johansson A. et al 2004 associated social and general health factors and symptoms associated with temporomandibular disorders and bruxism in a population of 50-year-old subjects, after which he concluded that a large percentage of BS is grouped with TMD [33].

Troshin V.D. In 2002, studying pain syndromes in the practice of a dentist, he came to the conclusion that the sound accompaniment and pain in the TMJ are synchronous with an episode of compression and friction of the teeth [30].

Ciancaglini R. 2001, determining the relationship of bruxism with craniofacial pain and symptoms of the masticatory system in the adult population, found that episodes of compression and grinding of teeth with sound accompaniment and pain in the TMJ area entail limited movement of the lower jaw [31].

Akhter R. et al 2011 studied the incidence of temporomandibular disorders over a 3-year period and assessed the risk of TMJ among university students in Japan. The results showed that jaw trauma, stress and bruxism were significantly associated with an increased risk of developing TMJ disorders at 3 years and were more common in women [15].

Nishio C. et al 2009 investigated the load distribution on the condylar surface of the mandible during prolonged compression and performed statistical processing using mathematical models of the TMJ. Model elements were developed based on magnetic resonance imaging of two subjects with or without anterior displacement of the TMJ disc. The result of the study indicates that the displaced disc affects the intensity of distribution in the posterior region of the articular surface of the mandibular head during prolonged compression, which leads to damage to the cartilage on the surface of the mandibular head [25].

A.P. Zaligyan 1986 in her writings identified three clinical forms of bruxism: 1) compensated, 2) acute, 3) chronic.

The compensated form is characterized by violations of the function of compression and friction of the teeth without complaints from the patient, at this stage there are no morphological changes and complications. In the acute form, there are cases of spontaneous compression of the teeth with pain in the masticatory muscles.

In the chronic form, long-term courses are characteristic, increased nervous excitability is observed, complicated periodontal diseases are found in the oral cavity, due to pathologically worn teeth, a reduced height of the lower third of the face and TMJ disease are noted [9,13].

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Fadeev R.A. 2007 identified and prepared for the elimination of occlusal disorders in patients with dysfunctions of the temporomandibular joints, while he found that the first clinical sign of parafunctions for the dentist is the pathological abrasion of tooth enamel and the presence of cracks in the tooth enamel [31].

Peregudov A.B. et al. in 2008, after conducting clinical computer monitoring of occlusion for promising use in practical dentistry, they determined that due to the endurance of the periodontium and the architectonics of the hard tissue of the tooth to withstand large force loads and pressure that occurs during the act of chewing, tooth enamel is not erased immediately during bruxing [22].

Abolmasov N.N. In 2010, he described the prospect of selective grinding of supercontacts, because it is supercontact that is peculiar in terms of the degree, volume and nature of the load that develops in the masticatory muscle during bruxism, which leads to injury to tissues and organs in the oral cavity [1].

Smukler X. in 2006 studied the normalization of occlusion in the presence of intact and restored teeth, during which he found that in bruxism, pathological and physiological abrasion are identified on the same surface. The worn facets do not provide information about the presence of bruxism at the moment, it can also be a sign of previous lesions [27].

Gaidarova T.A. In 2003, she studied the mechanisms of formation and applied the pathogenetic principles of the treatment of bruxism. The author argues that the important triggers for the development of pathological abrasion are: biological age, gender, occlusion features, enamel endurance, peculiar irregular diets without a prescription from a nutritionist, the use of more acidic foods in the diet, abundant saliva and characteristic pathologies of the esophagus. And only if the above triggers are taken into account, the outcome will be the correct differentiation of the diagnosis of tooth wear, [7].

Boikova E.V. In 2015, she diagnosed and applied the principle of complex treatment in patients with bruxism, after which she determined that the cutting edges of the incisors are first erased, after which, with the passage of time, the tubercles of the molars are erased [4].

The crater-shaped depressions with sharp edges that arise in the process of tooth abrasion create obstacles during transversal movements of the lower jaw, and the remaining parts of the enamel on the occlusal surfaces of the teeth create premature contacts. Premature tooth contacts affect the periodontium, causing its functional overload. Over time, the reserve forces of the dentoalveolar system are depleted and the stage of decompensation sets in with the exposure of the necks of the teeth, atrophy of the sockets [21].

Along with pathological abrasion of teeth in bruxing, already at the age of twenty, a non-carious defect of hard tissue near the neck of the tooth is detected, progressing over time. Thus, a defect in the cervical region on the upper premolars has a tendency to clench the teeth, if a defect on the lower canine has a tendency to bite nails, with a defect on the lower central ones, non-contact parafunctions of the teeth are observed [3,4,14].

Shershneva D.V. In 2015, studying the features of Brooks behavior in a stressful and non-stressful period, she came to the conclusion that in patients with bruxism, the masticatory muscles are large explicated, the face is in the form of a “square”, they clench their teeth more than once even without taking food, large masticatory muscles are visually determined, on the sides tongue, the imprint of chewing teeth is clearly visible [35].

V.N. Trezubov in 2007, examining the clinical picture and conducting diagnostics, revealed that in clinical forms of masticatory muscle parafunction (contraction, friction, spontaneous chewing) it is considered that the statics of the lower jaw are tense, the masticatory muscle and the lateral pterygoid muscle are tense and spasmodic, painful on palpation [29].

When combining some of the manifestations of this pathology for the diagnosis of bruxism, a number of criteria have been developed by the American Academy of Sleep Medicine (AASM). From the words of the patient, we first learn about the estate from time to time clenching and grinding of teeth, in addition to the presence of one of the clinical manifestations of bruxism, they can be pathological tooth wear, inconvenience, fatigue or soreness of the masticatory muscles, difficulty opening the mouth, especially in the morning after waking up, excessive growth in the volume of masticatory muscles. It should be emphasized that in order to make a more accurate clinical diagnosis, it is necessary to find out if the patient has parallel disorders in the body, poor sleep, the use of psychotropic drugs, which also contribute to an increase in muscle tone [8].

Loginova N.K. In 2005, investigating changes in functional and diagnostic parameters during the restoration of occlusal contacts in the process of orthodontic treatment of patients with incisal disocclusion, he determined the importance in diagnosis of the study of occlusal articulation disorders [19].

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Starikov H.A. In 2010, studying the clinical detection of occlusal disorders in patients with periodontal diseases, he came to the same conclusion that the analysis of occlusal and articulatory pathologies is an important diagnostic criterion [28].

Dolgalev A.A. In 2009, analyzing the tactics of an individual approach in restoring the integrity of the dentition of patients with dysfunctions of the temporomandibular joint and masticatory muscles, revealed that by registering occlusal ratios, the doctor receives an accurate diagnosis, which is necessary for drawing up a treatment plan, as well as predicting the result of treatment [11].

Virgunova T.V. In 2013, in her works on studying the features of the clinic, diagnosis and treatment of bruxism in young people, she described the characteristic predominance of transversal movements of the lower jaw during group management in patients with bruxism [6].

Also, one of the occlusal diagnostic markers of bruxism is the sliding length from the central occlusion to the maximum intertubercular closure. It is known that in individuals with nocturnal bruxism, this value is twice as high as in healthy individuals (0.95 mm in patients with EB, 0.42 in the healthy group) [12].

Ommerbom M.A. et al 2010 determined the clinical significance of sleep bruxism based on several occlusal and functional interrelated parameters. The result showed that even small pronounced slip may be of clinical importance in the development of increased facet wear in patients with current sleep bruxism activity [26].

Evaluation and registration of occlusal contacts is carried out directly at the reception, using articulation paper or special foil, also with the help of a diagnostic model plastered in the articulator. All the same, there is no information about the dynamics and nature of night patterns of bruxing movements of the lower jaw. It is possible to detect and investigate the interaction of occlusion in work only when using an individual device. This device is an individual kappa "Bruxchecker" [22].

More reliable data can be obtained using the Bruxchecker in a dream, since a plate that is thin in thickness does not affect muscle activity, the Bruxchecker is significantly larger in thickness, and it can also serve as an auxiliary impetus for increasing muscle activity. The Bruxchecker surface is coated with a dye that wears off during parafunctional activity, visualizing the pattern of occlusal movements in dynamics. The use of individual Bruxchecker mouthguards is indicative for the patient and informative for the doctor in terms of diagnostics [16].

The patient wipes off the special paint from the surface of the Bruxchecker, and an occlusal pattern is displayed during bruxing. Evaluating and diagnosing the occlusal pattern, the doctor immediately determines the degree of complexity of the pathology, and the patient, having seen it again, will think about his health [8,20].

Khorev O.Yu. In 1996, he studied the etiological factors and the clinical course of bruxism in children and adolescents, while he determined that in people with orthognathic bite, the masticatory force of only 45-55% functions during the act of chewing [34].

Ferrario V. in 1992, studying the biomechanical model of the human lower jaw and the stabilizing activity of the upper part of the lateral pterygoid muscle, found that the force developed by the masticatory muscles in bruxism is characterized by significantly greater indicators of muscle biopotentials than under normal conditions [25].

Boikova E.V. In 2015, after conducting a comprehensive diagnosis by gnathodynamometry in patients with bruxism, he determined that the forces of the most compressed jaws in the subjects were significantly different in high rates, when compared with the control group [8].

Manfredini D. 2009, studying the role of psychosocial factors in the etiology of bruxism, came to the conclusion that the following factors follow in bruxism: restlessness, sensitivity to various stressful situations, anhedonia, therefore, great interest should be paid to psychological testing [11].

Giraki M. et al in 2010, having made a correlation between stress, namely the ability to cope with stress and current bruxism in sleep, determined after the test in the subjects with pronounced manifestations of bruxism in sleep, the peak of muscle biopotentials was revealed when evaluating the indicators: "Fatigue", "Difficulties during work", “Mental problem”, “Everyday problem”, “Escape from the problem” [32].

Silin A.V. et al. in 2013, after conducting a surface electromyography of the temporal and masticatory muscles proper in the diagnosis of muscular-articular dysfunction of the temporomandibular joints, appreciated this diagnostic method for its simplicity, accessibility and information content, it is often used in

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assessing masticatory muscle disorders, it is also possible to assess the condition of the muscles at the beginning and at the end of therapy. [24].

C.F. Amorim et al. In 2012, he conducted an electromyographic analysis of the masticatory and temporal muscles in patients suffering from sleep bruxism after wearing an occlusive splint. The author revealed asymmetric activity of the temporal, masticatory, external pterygoid and suprahyoid muscles, and with a decrease in the rest time in the phase of one chewing movement, the time of muscle activity increases, and in a state of physiological rest, spontaneous activity of masticatory muscles is noted [24].

Ermoshenko R.B. In 2007, he applied a new method of monitoring electromyographic potentials in the diagnosis and treatment of bruxism, after which he found that occlusion correction and splint therapy effectively reduce the asymmetry of the electromyographic activity of the masticatory muscles, improving the amplitude-time parameters of the electromyogram [12].

Virgunova T.V. In 2013, she studied the features of the clinic, diagnosis and treatment of bruxism in young people, while she noted that the action potentials of the masticatory and temporal muscles change on the electromyogram indicators [6].

Dolgalev A.A. In 2009, in his works, studying the tactics of an individual approach in restoring the integrity of the dentition of patients with dysfunctions of the temporomandibular joint and masticatory muscles, he revealed spontaneous muscle stenosis at rest from 66 to 167 μV, which is more than the norm by 19 μV; and during the “jaw clenching” test, the amplitude indicators of the right and left masticatory and temporal muscles were reduced by 57% and 48% and 23% and 19% [11].

Other researchers determined that in the right masticatory muscle proper there is 17% more than in the left asymmetry of the maximum bioelectrical activity. The amplitude of the action potential of motor units decreased after the therapy. It should be noted that before therapy, the results of the “silence period” are higher than after, but before and after therapy, the results of the masseter reflex were similar to normal values [15].

Much earlier, in 1991, a group of Russian researchers revealed a significant increase in the results of electromyograms of the bioelectrical activity of the own masticatory and temporal muscles in patients with bruxism during the "rest" test, and in the "maximum clenching of the teeth" test [16].

L.A. Skorikova in 2000, having studied the functional state of the chewing muscles and the brain in persons with parafunctions of the chewing muscles, created a technique for the simultaneous recording of electroencephalogram data and electromyogram potentials. This new technique will allow to determine the unitarity, validity and synchrony of the functions of the brain and masticatory muscles [25].

Loginova N.K. In 2005, studying the changes in functional diagnostic parameters during the restoration of occlusal contacts during orthodontic treatment of patients with incisal disocclusion, when studying the state of the muscles, she used Dopplerography to detect regional blood flow [19].

Later in 2011, a group of other Russian researchers, when diagnosing bruxism and studying the treatment of occlusal disorders in young people, also revealed increased bioelectrical activity and asymmetric work of the masseter muscle [6].

Kornienko I.A. In 2007, studying endogenous and exogenous factors affecting the development of skeletal muscle energy, he came to the conclusion that the functional states of the masticatory muscles are interconnected with the general states of the muscular systems and the whole organism as a whole, or rather with its physical fitness, degree of development and performance [18].

Kolpakov V.V. and co-authors in 2006, studying the concept of typological variability of physiological individuality, namely, the intrapopulation diversity of a person’s habitual motor activity and giving its typical assessment, they argue that the triggers in pathogenesis and clinic, as well as influencing the final result in the treatment of dental diseases, is the degree of habitual motor activity [17].

Filimonova T.K. in her research, she used myography to determine the functional tension of the autonomic nervous system in track and field athletes, determined hypodynamia and overloads that negatively affect the functional state of the masticatory muscles, I would like to note that the peak in indicators occurs especially when combined with emotional and psychological manifestations. The author concluded that long-term and heavy training in athletes adversely affects the state of the dentoalveolar muscular apparatus, which indicates an increase in the amplitude of the electromyography potentials of the masticatory muscles proper when compared with the comparison group [32,33].

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T. Kampe in 1997, in his work on the study of personality traits in a group of subjects with long-standing bruxing manifestations, established polysomnography as the "standard" in the method of diagnosing nocturnal bruxism, and a sleep laboratory is required to undergo this diagnostic method [9].

Classer G.D. In 2010, after conducting a considerable number of clinical applications of the use of oral devices in the treatment of sleep bruxism in adults and the search for mechanisms of improvement, he used the sleep laboratory for diagnosis. Diagnostics in the sleep laboratory combines the recording of data obtained from: Electroencephalogram - reveals the performance of the brain, Electromyogram - reveals the performance of the masticatory muscle, Electrocardiogram - monitors the performance of the heart, Oximetry - detects the oxygen content in the blood, the amount and range of the act of breathing is also subtracted [19]. Thorpy M. J. 1997, in a guide to diagnosing and coding sleep, indicated that recording from video and audio devices is necessary throughout the study in order to remove motor activities that are not similar to bruxism. Given the high cost of this method, it is impossible if there is no special laboratory, and the data obtained in an environment unfamiliar to the patient are not monotonous, and this circumstance justifies an increase in the frequency of observations up to 8-9. Considering all these restrictions, this method is unprofitable and is functionally used in large cities in the diagnosis of complicated clinical diagnostic manifestations and for research work [5,6].

As a result of the literature review, I, as the author, draw a conclusion about the complexity of diagnosis and the difficulty in identifying the manifestations of clinical signs (nighttime), which leads to aggravation of functional disorders of the masticatory muscles and rapid pathological erasure of the hard tissue of the teeth. And this series of signs of this pathology forms a kind of vicious circle of pathologies that are inextricably linked and proceed slowly mutually destroying each other [3,7,12].

I want to stop and this personally, my opinion, due to the availability and speed of obtaining the final information, I recommend using Bruschecker in the diagnosis of nocturnal bruxism. If in difficult cases you need visual and audio support, then it is now easy to do this by setting the camera of the required parameters, and most importantly, all this will take place in a familiar environment for the subject, that is, at home. And yet, I do not insist on the use of one or another research methodology, because it depends on the well-being of the region and the attitude of the patients themselves to their health. And of course, any technique requires the doctor to be able to diagnose and know the clinical manifestations, because it is precisely knowing these manifestations that they can be detected in the patient at the first appointment.

Список литературы

1. Алиев Н.Х., Гаффоров С.А., Идиев Г.Э. Чакка-пастки жаг бўғими меъёрий фаолияти ва патологияси механизмларини асослашнинг тамойиллари. Тиббиётда янги кун. -2020. - №1. С. 132-135
2. Алиев Н.Х. Чакка пастки жаг бўғимининг но артикуляр патологиясини ташхислаш усуллари // Тиббиёт ва спорт – Самарқанд, 2020/3. 59-62 бет.
3. Азимова Ш.Ш., Абруев У.Р, Расулов М.М. Тиш-жағ тизими аномалияларининг Бухоро шахар мактаб ёшдаги болалар орасида тарқалиши. //Доктор Ахборотномаси. 2020. - №1. - С. 23-28 бет.
4. Бакаев Жасурбек Нажмиддинович Қозиқ тишлар ретенциясининг этиопатогенези ва диагностикасида рақамли ёндашув (Адабиётлар шарҳи) / Журнал стоматологии и краниофациальных исследований, Тошкент-2022. // ISSN 2181-0966, 3 (2) 2022, С. 57- 60.
5. Гаффоров С.А., Бакаев Ж.Н. Особенности взаимосвязи заболеваний слизистой оболочки полости рта с соматической патологией //Вестник ТМА. - Ташкент, 2019. - № 3. - С.20-24.
6. Гаффоров С.А., Бакаев Ж.Н. Оғиз бўшлиғи шиллиқ қавати касалликлари – патологик аспектлари ва профилактика асослари // Stomatologiya. - Ташкент, 2019. - №4 (77). - С.75-80.
7. Ж.Н. Бакаев. Доимий тишларнинг чиқиши вақтининг ўзгариши натижасида тиш-жағ тизим аномалияларининг этиопатогенези, замонавий ёндашув.(Адабиётлар шарҳи) «Тиббиётда янги кун», 4 (32) 2020, С. 119- 123.
8. Карлов В.А. Лицевая боль. Лекция. // Журнал неврологии и психиатрии.- 2010.- Т. 5.- С. 90-100.
9. Киргизова Е.С. Способы коррекции психоэмоционального состояния и болевой реакции пациентов при ортодонтическом лечении: автореф. дис. ... канд. мед. наук : 14.00.21 / Е.С. Киргизова ; Моск. гос. медико-стоматол. ун-т. – М., 2008. – 22 с.

ISSN NO: 2770-2936
Date of Publication:22-11-2022

10. Козлов Д. Л. Этиология и патогенез синдрома дисфункции височно-нижнечелюстного сустава / Д.Л. Козлов, А.Я. Вязьмин // Сибир. мед. журн. – 2007. – N 4. – С. 5–7.
11. Оборин Л.Ф. Взаимодействие биомеханических и гемодинамических факторов при повреждении височно-нижнечелюстного сустава врожденного и приобретенного характера / Л.Ф. Оборин, Е.С. Патлусова // Рос. журн. биомеханики. – 2009. – Т. 13, N 4 (46). – С. 94–106.
12. Одинак М.М. Болевые синдромы в неврологической практике / М.М. Одинак, С.А. Живолупов, И.Н. Самарцев // Журн. неврол. и психиатр. – 2009. – N 9. – С. 80–89.
13. Олимов С.Ш. Значение метаболических показателей слюны в развитии зубочелюстных аномалий у детей с метаболическим синдромом.// “Стоматологик касалликларни даволашда ва профилактикасидаги долзарб муаммолар” Илмий амалий конференцияси. Бухоро. 2016.- 33бет.
14. Олимов С.Ш., Гаффоров С.А. Болаларда тиш-жағ тизими нуқсонлари ва соматик касалликлар орасида боғлиқликнинг илмий асослари. (адабиётлар шарҳи).// Журнал. Stomatologiya. -2019й №1.60-65 бет.
15. Олимов С.Ш., Саидов А.А., Гаффаров С.А., Хожиметов А.А. Мактаб ёшдаги болаларда гепатобилиар тизимнинг тиш-жағ нуқсонлари патогенезидаги аҳамияти.// Журнал Доктор ахборотномаси. Самарканд. 2019 -№2. - 35-39 бет.
16. Олимов С.Ш. Оценка эффективности профилактических мероприятий при ортодонтическом лечении детей с зубочелюстными деформациями.// Ўқув-услубий қўлланма. ЎзР ССВ томонидан 13.11.08 тасдиқланган. Ташкент. 2019. - 21 б.
17. Онопа Е.Н. Функциональное состояние жевательных мышц, височно-нижнечелюстного сустава и органа слуха при мышечно–суставной дисфункции / Е.Н. Онопа, В.А. Хватова, В.М. Семенюк // Маэстро стоматол. – 2004. – N 3. – С. 61–69.
18. Пузин М.Н. Биоповеденческая терапия расстройства височно-нижнечелюстного сустава / М.Н Пузин., Р.Г. Марулиди, О.С. Шубина // Биоуправление-4 : теория и практика. – Новосибирск, 2002. – С. 252–259.
19. Пузин М.Н. Лицевая боль / М.Н. Пузин. – М. : Изд-во РУДН. – 1992. – 310 с.
20. Рощин Е.М. Диагностика нарушений артикуляции нижней челюсти у больных с дисфункцией височно-нижнечелюстного сустава и их лечение : автореф. дис. … канд. мед. наук : 14.01.14 / Е.М. Рощин ; Тверская гос. мед. акад. – Тверь, 2011. – 25 с.
21. Семенов Р.Р. Клинико-диагностические аспекты патологии височно-нижнечелюстного сустава: автореф. дис. … канд. мед. наук : 14.01.14 / Р.Р. Семенов ; Ин-т повыш. квалиф. федер. мед.-биол. агент. – М., 2013. – 25 с.
22. Семенченко Г.И. Лечение дисфункциональных синдромов ВНЧС / Г.И. Семенченко Л.Я. Дребалюк // Заболевания ВНЧС / под ред. Н.А. Плотникова. – М. : Феникс, 1988. – С. 36–40.
23. Тревелл Дж.Г. Миофасциальные боли / Дж.Г. Тревелл, Д.Г. Симонс // Медицина. – 1989. – Т. 1. – С. 225.
24. Aliev N.H. Clinical and functional methods of assessment and diagnosis of the pathological condition of the temporomandibular joint // Тиббиётда янги кун – Бухоро, 1(33) 2021. Январь-Март. 375-380 бет.
25. Azimova, S. S., Saidov, A. A., & Ibragimov, F. I. (2021). Medical and Psychological Approach in the Early Diagnosis and Treatment of Cutaneous Bite in Children. Annals of the Romanian Society for Cell Biology, 16137-16142.
26. Bakaev Zh.N.,Olimov S.Sh. New views on diagnostic methods for the formation of retention of the upper permanent canines(literature review) / International Journal of Integrated Education // 2020, - Vol 4. - P. 129-135.
27. Gafforov S.A., Aliev N.KH. Improvement of clinical and functional as-sessment methods and diagnostics of the pathological condition of the temporary - mandibular joint // ACADEMICIA: An International Multi-disciplinary Research Journal, Vol. 10, Issue-4 april 2020.-506-514 s.
28. Bakaev Zhasurbek Nazhimdinovich. Musculosceletal dysfunction of the temporomandibular joint, indicators of electromyographic examination, before and after treatment of complicated dental and maxillary anomalies /European Journal of Modern Medicine and Practice // VOL. 2, NO. 3 (2022) – P. 103-107.

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29. J.N. Bakaev, S. Sh. Olimov. Modern approaches to diagnosis, etiology and pathogenesis of the upper permanent canine retention formation (literature Review) / European Journal of Molecular & Clinical Medicine // Volume 07, Issue 03, 2020. - P. 3815 -3830. 57. Hubbard D. Myofascial trigger points show spontaneous needle EMG activity / D. Hubbard, G. Berkoff // Spine. – 1993. – Vol. 18. – P. 1803–1807.
30. Khabilov, N. L., & Nusratov, U. G. (2019). Features dental care for patients with type 2 type depending on disturbance of Kidney function. Asian Journal of Multidimensional Research (AJMR), 8(10), 18-24.
31. Montgomery G.T. Psychophysiological responsiveness on a laboratory stress task : methodological implications for a stress-muscle hyperactivity pain model / G.T. Montgomery, J.D. Rugh // Biofeedback and Self-Regul. – 1990. – Vol. 15 (2). – P. 121–134.
32. Nusratov, U. G. (2020). Analysis of oral health and quality of life of groups of patients with type 2 diabetes and chronic kidney disease. PalArch's Journal of Archaeology of Egypt/Egyptology, 17(6), 14385-14393.
33. Saidov, A. A. (2020). Hygienic condition of the oral cavity during orthodontic treatment of children with temporomandibular joint dysfunction. The Pharma Innovation Journal. Indiya, (9), 6.
34. Zhumaev, A. K. (2020). Partial defects of dental rows results of the questionnaire and clinical assessment of the condition of removable prostheses. Middle European Scientific Bulletin, 6, 94-97.
35. Zhumaev, A. K. Of Partial Defects of the Dental Rows of Dynamic Study of the State of the Mucosa of the Oral Cavity in the New Conditions of Functioning. International Journal on Integrated Education, 3(12), 61-63.