SUMMARIES OF SCIENTIFIC PUBLICATIONS IN BULGARIAN

Publications and reports published in peer-reviewed scientific journals, indexed and referenced in globally recognized databases of scholarly information.

7.1. Andreeva R., Arnautska H., Belcheva A., Georgieva M., Dimitrov E Epidemiological study of malocclusions of 5 and 6 years old children from northeastern region of Bulgaria, Journal of IMaB 2016, vol.22,issue 2; 1172-1174

Summary: A malocclusion is a misalignment of teeth or incorrect relation between the teeth of the two dental arches. The aim of this presentation is to show the percentage of the children with malocclusions and comparison between children with mild and severe malocclusions from rural and urban regions. Materials and methods: 1200 children between 5 and 6 years old from North-eastern Bulgaria (600 urban and 600 rural) were examined. WHO standards were applied and the data was collected in WHO statistic forms, which were modified accordingly. The children were divided in 3 groups healthy, with mild and with severe malocclusions according to Angles classification. Results: More than a half of the urban children are healthy – 51,5% and the biggest percent age of the malocclusions are mild – 31,3%, only 17,2% have severe malocclusions. The rural children are without malocclusions -23,8% and -39,2% of them are with severe orthodontic deformations. Relative shares of children from both urban and rural regions is 37,7%. The relative share of the children with malocclusions and rural regions is 62,3%. Conclusion: A little percent of the rural children are without malocclusions and rural regions is 62,3%. Conclusion: A little percent of the rural children are without malocclusions and rural regions is 62,3%. Conclusion: A little percent of the rural children are without malocclusions and more of them are with severe ones. We suggest that specialist have to work on better prevention in these regions

7.2. Andreeva R., Arnautska H., Belcheva A., Georgieva M., Dimitrov E Loss of space according to the time and the type of the premature extracted deciduous teeth ; J of IMaB 2016, vol.22,issue 2; 1169-1171

Summary: There is a difference of space loss depending on the time of premature extraction and the type of the prematurely extracted teeth. The aim of the study is to determine the space loss according to the time and the type of the extracted teeth. Material and methods: We studied 90 children 6 to 9 years old with premature loss of one or more primary teeth divided into three groups according to the severity of the orthodontic deformation. We used two biometric methods – the Moyers method and measured the mesial and distal movement of the adjustment teeth by drawing perpendicular lines towards the middle line. Results: The average amount of space lost is 0,033 mm for the first group, 2,2 for the second and 3,16 for the third group. The lack of space when the first primary molars are extracted is 0,37 mm in the upper jaw and is due to medicalization of the second primary molars are prematurely extracted is 1,2 for the upper and 1,45 for the lower jaw. Conclusion: The time is a significant factor for the loss of space. The reduction of space increases when the premature extraction is done before more than two months and when second primary molars are extracted.

7.3. Dimova M., H. Arnautska, D. Konstantinova, I. Gerdzhikov, T.Georgiev, D.Yovchev Correlations between findings of occlusal and manual analysis in TMD- patients; J of IMaB 2016, vol.22, issue 3; 1242-1247

Summary: The aim of this study was to investigate and analyze the possible correlations between findings by manual functional analysis and clinical occlusal analysis in TMD-patients. Material and methods: Material of this study are 111 TMD-patients selected after visual diagnostics, functional brief review under Ahlers Jakstatt, intraoral examination and taking periodontal status. In the period September 2014 - March 2016 all patients were subjected to manual functional analysis and clinical occlusal analysis. 17 people (10 women and 7 men) underwent imaging with cone-beam computed tomography. Results: There were found many statistically significant correlations between tests of the structural analysis that indicate the relationships between findings. Conclusion: The presence of statistically significant correlations between occlusal relationships, freedom in the centric and condition of the muscle complex of masticatory system and TMJ confirm the relationship between the state of occlusal components and TMD.

7.4. Dimitrov E, Georgieva M, Andreeva R, Dimova-Gabrovska M, Arnautska H. Caries prevalence among 5-7-year-old children in northeast Bulgaria. Journal of IMAB–Annual Proceeding Scientific Papers. 2017;23(3):1633–6.

ABSTRACT: The aim of the current epidemiological research is to present the caries prevalence in children and on tooth surfaces in 5-7 – year-olds from Varna. The object of the current epidemiological research is a representative part of 100 5-7 – year-old children, randomly chosen. The unit of observation is temporary and early mixed dentition, primary molars and their occlusal and approximal surfaces. The survey was carried out according to WHO's criteria. For caries risk assessment it is used the ICDAS system, where for a diagnostic limit was chosen d3mft. As a result from the conducted epidemiological research it is concluded that in this age group 93% of the children have experience with caries and barely 7% are caries free (dmft/ DMF(T+t)=0). The intensity d_{1-3} mft and D_{1-3} MF(T+t) of the caries have an average value of 5,76 ± 2,9. The relative share of the approximal caries of the primary molars on maxilla and mandible is 81,5% for both. The relative share of the occlusal caries is 19,6%. In the current research, it is not established statistically significant difference (P<0,05) concerning approximal lesions on first and second primary molar. There is the statistically significant difference (P<0,05) in the relative share of occlusal caries, which mainly affects the occlusal surface on the second primary molar. The relative share of the children without occlusal caries on primary molar is 60%, while those without approximal caries is barely 18%.

7.5. Valcheva Z., Arnautska H., Dimova M., Ivanova G., Atanasova I., The role of mouth breathing on dentition development and formation, Journal of IMAB- 17 january 2018, vol.24, issue 1, 1878-1882

Summary: The influence of mouth breathing on the development of the dentition and dento-facial deformities is a problem causes concerns among the medical specialists. Mouth breathing has a major impact on the devel opment of the maxillo-facial region, occlusion and muscle tonus. The aim of this study is to assess the relation ship between etiological factors, pathogenesis and disturbances in mastication in mouth breathing patients. Material and methods: For this article, data is obtained from 43 medical, literary sources. Results: Literature review demonstrated that mouth breathing habit affects mostly children aged 7 - 12 years. In the vast majority of studies, the authors established a relation between mouth breathing and the development of maxillo-facial region and occlusion. The malocclusions described include a distal occlusion, anterior open bite, in crease overjet, posterior crossbite, crowding and average incisors inclination disturbances. These clinical conditions become more complicated in the late-mixed and permanent dentition if mouth breathing continues to persist. Conclusion: The habitual mouth breathing is a

great medical problem nowadays. An increasing numbers of patients with this condition although the development of technology for early diagnostic is embarrassing. This condition is strongly related with different malocclusions such as anterior open bite, overjet, distal occlusion, underdeveloped and narrow upper jaw, increased anterior facial height.

7.6. Valcheva Z., H. Arnautska, M. Milkov, S. Peev, G. Ivanova, I. Atanasova, C. Madjova. Determination of the main reasons for difficult nasal breathing in children in primary and mixed dentition, Sleep medicine 2019,64;360-443

Summary: According to the literature, the prevalence of mouth breathing children vary from 5% to 75%. As to gender, there is a slight predominance of this pathology in females when compared to their male counterparts. A wide range of groups of study children are described in the literature and different rates of mouth breathing in children are obtained. This makes comparisons between them problematic. Nevertheless, most authors have similar results on the causes that lead to mouth breathing. The aim of this article is to determine and analyze the main reasons for difficult nasal breathing in children in primary and mixed dentition. For the purposes of this article 412 children between the ages of 3 and 12 were studied. All of the studied children were examined by the same doctor of dental medicine, and were consulted and diagnosed by an ear-nose-throat specialist as well. We used the methods of anterior and posterior rhinoscopy. The children were further divided according to their gender and type of dentition. Results: The main reason for the difficult nasal breathing in primary dentition is allergic rhinitis (n¹/₄30). The second cause in this studied age group is adenoid hypertrophy ($n\frac{1}{2}25$). In the early mixed dentition the most common cause of the difficult nasal breathing is adenoid hypertrophy (n¹/₄184). A significantly small percentage of children in early mixed dentition (n¹/₄17, 3,80%) the cause of difficult nasal breathing is hypertrophy of the palatine tonsils. The percentage of children in late mixed dentition (n¹/₄224) with adenoid hypertrophy decreases (n¹/₄26), allergic rhinitis occurs in only 31 of the studied children and the percentage of children with hypertrophy of the palatine tonsils increases. Conclusion: The main reason for the difficult nasal breathing in primary dentition is allergic rhinitis (54,50%), whereas in early mixed the main cause of mouth breathing is adenoid hypertrophy.

7.7. Milkov M., Z. Valcheva, H. Arnautska, S. Peev, C. Madjova Oral breathing in children and its association with obstructive sleep apnea, Sleep medicine 2019,64;257

Summary: The influence of mouth breathing on development of the dentition and dento-facial deformities is a problem causes concerns among the medical specialists. Mouth breathing has a major impact on the development of the maxillo-facial region, occlusion and muscle tonus. Both- nose and mouth breathing provide lungs with oxygen but with extremely disparate effects on the body and different levels of oxygen supply. The aim of this study is to assess the relationship between mouth breathing children and obstructive sleep apnea. For this article, data is obtained from 30 medical, literary sources. Results: Mouth breathing has been linked to oral conditions such as dental caries, secondary halitosis, craniofacial deformity and malocclusion, as well as abnormal swallowing. It is also related to medical conditions such as altered head, neck and body posture, obstructive sleep apnea and asthma. Conclusion: The habitual mouth breathing is a great medical problem nowadays. Although the relationship between mouth breathing and oral and medical conditions seems well established, it is difficult to assess in all cases the cause-effect link. More studies are needed to explore a causal relationship.

7.8 Milkov M., Z. Valcheva, H. Arnautska, I. Atanasova , S.Peev, Determining the degree of nasal obstruction in children with difficult nasal breathing in primary and mixed dentition, Sleep medicine 2019,64;257

Summary: Difficult nasal breathing is the condition where there is a partial or full, temporary or permanent obstruction of the airway and the processes of inhalation and exhalation are carried out through the mouth. Where there is no morphological or anatomical reason for the occurrence of mouth breathing, it is defined as a harmful habit. The aim of this article is to determine the degree of nasal obstruction in children diagnosed with difficult nasal breathing in primary and mixed dentition. For the purposes of this article 412 children between the ages of 3 and 12 were studied. All of the studied children were examined by the same doctor of dental medicine, and were consulted and diagnosed by an ear-nose-throat specialist as well. Acoustic rhinometry and rhinomanometry were used of nasal obstruction. We used the methods of acoustic rhinometry and rhinomanometry and the nasal resistance was reported in the following obstruction classes:-Class 1 (VR < 1/4 0.75, Flow> 500 Pa)- very low (missing) degree of obstruction- First degree of obstruction, Class 2 (VR 1/4 0.75-1.00, Flow 1/4 300-500 Pa)- The second degree of obstruction, Class 3 (VR 1/4 1.00-1.25, Flow 1/4 180 300 Pa)- Third degree of obstruction, Class 4 (VR 1/4 1.25-1.50, Flow 1/4 60-180 Pa)-Fourth degree of obstruction, Class 5 (VR> 1.50, Flow < 60 Pa). Results: In deciduous dentition the children with first degree of obstruction predominate (54,50%), followed by those with third degree (38,20%). In early mixed dentition the percentage distribution of second and third degree of obstruction is the same (45,70%). In late mixed dentition the greatest number is comprised of the children with first degree of obstruction (57,00%), followed by those with second degree. Conclusion: Our results show that of all the children with difficult nasal breathing 99 (24,00%) have first degree of nasal obstruction, 162 (39,30%) have second degree, followed by 151 children (36,70%) with third degree.

7.9 Valcheva Z., H. ArnautskaAlgorithm for early prevention and treatmentof mouth breathing children, Journal of IMAB. 2022; 28(Suppl 2)

Summary: Humans have the innate ability to breathe through the nose, but because of different reasons they can become mouth breathers, something which has a serious impact on them, as well as on the development of their orofacial region The purpose of our study is to create an algorithm for early prophylaxis and treatment of children with different degree of expressiveness of the predisposing factors in the appearance of mouth breathing. Materials and methods: A total of 1667 children from Varna aged between 3 and 12 years were examined. The results of the clinical examination of every child were assessed according to 19 indicators. A total of 120 cephalometries of children in mixed dentition were analyzed. The mouth breathing children were examined through the methods of anterior and posterior rhinoscopy, acoustic rhinometry and rhinomanometry performed by an otolaryngologist. Results: The results of our studies show that 24,7 % of the examined children are diagnosed with difficulty breathing through the nose and 19% habitual mouth breathing. In primary and mixed dentition in first and second degree of adenoid hypertrophy, it is essential to repair breathing through the nose with the help of exercises that stimulate normal breathing. In third degree of adenoid hypertrophy, it is essential to remove the hypertrophic tissue partially or completely and begin myofunctional therapy and subsequent treatment of the concomitant deformation. Conclusion: Multidisciplinary treatment approach in children presenting difficulty in nose breathing and incomplete skeletal growth is extremely important.

Publications and reports published in non-refereed journals with scientific review or published in edited collective volumes.

8.1. Gerdjikov I., M. Dimova, D. Konstantinova, H. Arnautska, Prosthetic Rehabilitation in Combined Maxillofacial Defects; Problems of Dental Medicine. 42, 2016,1:11-17

Summary : The aim of the method is to study the possibility of prosthetic rehabilitation in combined maxillofacial defects and the role of the prosthesis to restore the aesthetic appearance and aesthetics of a patient after an extended maxillary resection. Materials and methods: 42-year-old patient with postoperative extended defect after grinding of teeth 14 and 17 were taken impressions by additive silicone Elite HD. In the laboratory were cast metal caps of CoCr alloy Heraenium Pw, which is fixed with double cure cement ICem. The final impression was taken with individual spoon made of light curing plastic (TRIAD) and additive silicone Elite HD Putty and Elite HD Regular. The obturator was completed by classical technology with heat curing acrylic Meliodent HC. To create the mold surface was used light curing plastic Eclipse. Results: Combined prosthesis was marked by good retention and stability, allowing recovery of speech and masticatory function. Forming surface allow for a successful plastic surgery and restoring the appearance of the patient. Conclusion: Application of prosthetic treatments in combined maxillofacial defects enables successful recovery of the damaged functions and supports surgical methods for plastic reconstruction of the appearance of patients.

8.2. Dimova M., D. Konstantinova, I. Gerdjikov, H. Arnautska, T. Georgiev. Subjective assessment of patients concerning signs and symptoms of craniomandibular disorders; Problems of Dental Medicine 42, 2016,2:25-31

Summary : The aim of authors is to investigate the spread of signs and symptoms of craniomandibular disorders (CMD) and conclusions for the practice to be drawn on the basis of subjective assessment of patients examined in March and April 2015 in five specialized practices in the country. Materials and methods. Material of the study were 403 patients (250 women and 153 men) of a mean age $31,47 \pm 15,64$ years, who sought advice or treatment in five specialized practices in the country during the period from March to April 2015. All patients were interviewed with a questionnaire on "Clinical functional status of AFDT to DGZMK", completed with questions regarding available symptoms of the musculoskeletal system, during mastication and others. Data analysis was conducted with the software package SPSS for Windows, version 16.00. Results and Discussion. 34.5% of patients reported frequent headaches; 25.8% pain in the neck; 24.1% at the spine; 23,8% in the shoulder region; 26,67% in other joints of the body. Numerous statistically significant correlations have been established which show that signs and symptoms of CMD influenced each other, and they go out of the topographical structure of the masticatory system. Conclusions. In patients suspected of having CMD prosthetic treatment should be preceded by brief functional examination, which would justify the application of structural analysis in order to refine the diagnosis.

8.3 Gencheva A., Georgiev T., Arnautska H., Peev St., Papanchev G. Surgical Treatment of Impacted Lower Third Molars - Review Article. *Dental Review*, March 2016, 10-16, ISSN: 1313-4655.

Summary : The main purpose of this literature overview is to find the main principles of different surgical techniques and methods for treatment of impacted lower molars. Material and Methods: A literature review is carried out through the following search engines MEDLINE, PubMed, Elsevier

Journals, British Dental Journal è Europe PMC. We found 65 publications, which are connected with the theme of our overview. The following articles were obtained which represents a total of 18. We chose these publications, which have correct and concrete information about our overview. Results: After we made the review of all chosen publications and the references, we found the frequency of impactation of lower third molars and intra- and postoperative complications after odontectomia. We found the indications for different and alternative surgical techniques for removing impacted mandibular third molars like coronectomy and orthodontic extraction. The incidence of impacted lower third molars in different populations is about 35,9% to 58,7%. Temporary damage of n. alveolaris inferior after odontectomy is seen in 0,26% - 8,4% of the cases. In high-risk impacted third molars this percent can reach 20%. Postoperative complications after coronectomy are with incidence 4,4% inflammation, 43% patients with postoperative pain, 0% dry socket and 0% with damage of the lingual nerve. We did not found any cases of orthodontic extraction of impacted lower third molars with postoperative complications. Conclusion: The impacted third lower molars are frequent problem in the daily dental practice. It is necessary to know all the different surgical techniques and methods for treatment of impacted mandibular molars so the problem can be solved adequate.

8.4 Gencheva A., Georgiev T., Arnautska H., Peev St., Papanchev G. Surgical-Orthodontic Treatment of Impacted Upper Second Primary Molar – Clinical Case. *Dental Review*, March 2016, 22-27, ISSN: 1313-4655.

Summary: The impactation of deciduous molars is very rare condition and it generally affects the deciduous second mandibular molars and the deciduous first maxillary molars. The etiology of this condition is still unknown. The reasons for submersion and retention of deciduous molars are also not completely clarified. Suggested factors possibly involved in submersion of deciduous teeth are anklyosis, trauma, inflamation processes and genetic factors. We present a clinical case of a girl, 12 years old with totally impacted maxillary and mandibular deciduous molars and mandibular permanent second molar in infraocclusion. The chosen therapeutic approach is orthodontic-surgical. This case shows the importance of opportune diagnosis and the necessity of prevention and prophylaxis. The early and well-timed treatment helps to prevent the complications related with the impactation of deciduous molars and premolars and prevent the disturbance in occlusion and regular function.

8.5 Gencheva A., Georgiev T., Arnautska H., Peev St., Papanchev G. Surgical-Orthodontic Treatment of Impacted Canines - Review Article. *Dental Review*, March 2016, 37-44, ISSN: 1313-4655.

Summary: The main purpose of this literature overview is to find and discus different options for treatment of impacted canines. We compared different surgical methods and techniques for access and exposure of the impacted canines during the surgical-orthodontic treatment of patients. Material and Methods: A literature review is carried out through the following search engines MEDLINE PubMed, Elsevier Journals, British Dental Journal µ Europe PMC. We found 35 publications which are connected with the theme of our overview. The following articles were obtained which represents a total of 11. We chose these publications which have correct and concrete information about our overview. Results: After we made the review of all chosen publications and the references, we found the frequency of impactation of the maxillary and mandibular canines and the frequency of success and complications during treatment of patients with impacted canines. We found that the maxillary canine is the second most commonly impacted tooth with an incidence ranging from 1% to 2,5%. Often the maxillary canine is palatally impacted, with a ratio about 2:1. In 8% to 10% of the cases there is a bilateral impactation of canines. The

impactation of a lower canine is rare with incidence about 0,35%. We found that surgical-orthodontic treatment is 100% successful in cases with patients who are between 12 and 16 years old and 69,5% success when patients are between 20 and 47 years. Complications and failure of treatment are observed in cases with patients on age 30 and above. Conclusion: The impacted canines are frequent problem in the daily dental practice. It's necessary to know all the different techniques and methods for treatment of impacted canines to prevent the complications.

8.6. Valcheva Z., H. Arnautska, G. Ivanova, S. Yaneva, Skeletal and occlusal characteristics in mouth-breathing children, Journal of the Union of Scientists – Varna, Series "Medicine and Ecology" 2'2017/vol. XXII, pp. 42-47.

Summary: Breathing through the mouth and nose supplies oxygen to the lungs. Human beans breath through the nose, but they can be forced to breathe through the mouth because of different reasons. Nose breathing provides normal development of the maxillo-facial structures. Changing the pattern of breathing results in alteration of lower jaw, tongue and head positon. The aim of this study is to establish the role of mouth breathing in school-age children and the development of mallocclusion and skeletal growth pattern. Materials and methods: Diagnostic records were obtained from 74 children aged 7 to 17 years and also clinically evaluated. The patients were divid ed into two groups: the first group included 37 mouth breathing children (MB), and the second group - 37 nose breathing children (NB). Study cast analysis and cephalometric analysis were made of all patients. Results: A significant difference was established between mouth and nose breathing children with aid of the intermolar distance measurement method in the upper jaw. Intermolar distance is significantly lower than mean value for NB children. The MB children demonstrate retruded position of the mandible (SNB). No significant difference was found at the SNA angle degree between the both groups. MB children seem to have an increase anterior lower facial height. Conclusion: MB children demonstrate more severe compression of the upper jaw. There is more often a distal occlusion, narrower upper pharyngeal width, reduced nasopharyngeal space, and increased lower facial height.

8.7. Georgiev T., Peev St., Arnautska H., Alexieva E., Dimova M. Clinical Case of an Intraosseous Anastomosis Located in the Vestibular Wall of the Maxillary Sinus Between the A. Infraorbitalis and A. Alveolaris Superior Posterior. *Dental Review*, March 2016, 68-71, ISSN: 1313-4655.

Summary: The blood supply of the maxillary sinus is derived mainly from the infraorbital artery and the posterior superior alveolar artery. The vestibular wall of the maxillary sinus often contains anastomoses between the two arteries and thus may present problems for the surgeon during maxillary sinus floor augmentation using lateral window. The study reports a clinical case of an intraosseous anastomosis between the infraorbital artery and the posterior superior alveolar artery that was not captured on a computerized axial tomography scan (CAT), but was intraoperatively detected on the vestibular wall of the maxillary sinus. The lateral bone window was carefully removed using a diamond bur, without damaging the integrity of the vessel. Results: The surgical procedure was uneventful and no complications occurred: haemorrhaging during the operation was prevented. Conclusions: Computerized axial tomography scans (CAT) are incapable of capturing very fine details such as vessels within the bone, which could maximize the risk of intraoperative complications, if the surgeon lacks knowledge of the maxillary sinus vascularization when operating in this region. In those cases, Cone beam computed tomography (CBCT) scans are described as "the gold standard" in preoperative imaging of the maxillary sinus.

8.8. Matev L, H. Arnautska Tools for quality of life assessment in patients with obstructive sleep apnea. Varna Medical Forum [Интернет]. 2020;9(2).

Summary: Obstructive sleep apnea (OSA) is found in 24% of men and 9% of older women. Given the high prevalence of the OSA syndrome and its effects on physical and mental function, the quality of life (QoL) in OSA has aroused great interest in the modern scientific literature. The interest in QoL in patients with OSA is so great that various studies are being conducted. The purpose of this article is to present the various tools for assessing QoL in patients with OSA. For the period January 2020 - June 2020, in the available database (PubMed, BioMedCentral, ScienceDirect, Scopus, Web of Science), a systematic analysis of scientific publications examining the assessment of QoL in patients with OSA. This review illustrates the variety of tools used to study the assessment of CPAP, and the effects on QoL after the performed surgical, dental and behavioral treatments for OSA remain largely unexplored.

8.9. Gencheva A., T. Georgiev, H. Arnautska, G. Ivanova, K. Nogalchev Orthodontic extrusion followed by a surgical extraction of high-risk lower third molar:case report, Scripta Scientifica Medicinae Dentalis, vol. 2, No 2, 2016, p. 23-28.

Summary: The aim of this article is to present a clinical case of alternative method of surgical treatment of lower third molar with signs that indicate high risk of postoperative complications. Materials and methods: We present an orthodontic extrusion followed by surgical extraction of lower third molar. For precise diagnostics and suitable method of treatment we used standard panoramic radiograph and CBCT. As a method of surgical treatment we chose assisted orthodontic extraction with individually manufactured ring with soldered bar, fixed to tooth 47. Results: In our clinical case we achieved traction of the impacted lower third molar to safe distance from the mandibular canal. On the second stage of the treatment we performed a classic odontectomy without affect or damaging the IAN. Conclusion: The classic odontectomy is a surgical method with a high risk of damaging the IAN when the impacted tooth is very close to the mandibular canal. The orthodontic extraction like an alternative surgical method of high-risk lower third molars is preventive method, by which there is minimal risk of damaging the nerve during the surgery. The orthodontic extrusion makes the following surgical extraction a safe and secure method for the patient.

8.10. Andreeva R., H. Arnautska, T. Georgiev Dental fear and premature tooth extraction, Scripta Scientifica Salutis Publicae, vol. 2, No. 1, 2016, 60-62

Summary: Dental avoidance is a high risk factor for development of odontophobia and poor oral health including pre mature tooth extraction in children. The aim of this study is to evaluate the connection between dental fear and premature tooth loss. Subject of monitoring of the clinical research were 140 school children with mixed dentition. The clinical group consisted of 90 children with prematurely extracted teeth. The patients from the clinical group were divided into three groups of 30 patients. The control group consisted of 50 children with intact denture. A special questionnaire was filled in by the parents of the examined children regarding the dental fear of their children, whether there is such fear or not. The results show that while in the control group the majority of children are not afraid of dental treatment – 79.2%, in the groups surveyed more than half of the children said they were afraid of dental treatment, especially the ones from the third group – 57.7%. Conclusion: Children with prematurely extracted teeth have a higher level of dental anxiety due to which they suffer from poor dental health and early tooth loss. The use of behavioural techniques is recommended in order to improve their oral health.

8.11. Belcheva A., R. Andreeva, H. Arnautska. Premature Tooth Loss - Epidemiology. Literature Review. Varna Medical Forum. Vol. 5, 2016;2:57-60.

Summary: Preserving a place in the denture is necessary in order of premature loss of deciduous teeth. It occurs when the tooth is extracted one or more years before the period of physiological exfoliation. The aim of the review was to examine the prevalence of premature tooth loss. The problem of the premature tooth loss requires prevention as tooth decay and orthodontic deformations by using space maintainers.

8.12. Andreeva R, H. Arnautska Reasons for use of dental services in connection with premature tooth loss. IJSR. 2016; 5(5):2112-2113.

Summary: There are many reasons for visiting the dental offices. In this study we discussed three of them: preventive dental examination, defect noticed by parents and pain. The aim of the study is to find out the reasons for dental services among children with and without premature tooth loss of primary teeth. Methods and materials: the study covers 140 children between 6 and 9 years old. The control group consists of 50 children and the clinical group consists of 90 children with prematurely extracted teeth. The patients from the clinical group were divided into three groups of 30 patients. A special questionnaire was filled from the parents of the examined children about the history of dental visits and reasons for use of dental services. Results: For a majority of the children from the control group (42%), the main reason for visiting a dentist was a preventive dental examination. Only 3,3% from the first group and 10% from the second and the third group visit dentist for such a check. Majority of children from the examined groups visit the dentist because of a defect spotted by parents(53,3% for the first group and 60% for the second and third group). Pain is the reason for visiting a dentist in 43% of the children from the first group and 18% for the control and 30% for the second and the third group. Conclusion: Majority of the children with premature tooth loss were "problem-oriented visitors" rather than "prevention oriented visitors".

8.13. Milkov M., M Stoykov, H Arnautska, S Peev, D Petrova Important interrelations between posturology, vestibular disorders and dentistry, International Bulletin of Otorhinolaryngology,2020

Summary: Human posture is defined as any position that determines the balance with maximum stability, minimum energy consumption and minimum stress on the anatomical structures. Research done on posture makes authors look at the postural system as a whole. The aim of this article is to preview the connections between dentistry, postural science and vestibulogy. Scientific databases - Scopus, MEDLINE, PubMed were used for the research, with the following keywords - posturology, vertigo, dental medicine, orthodontics, pathological bite, for the 2000-2020 time period. Apart from scientific articles, information from different symposiums and lectures was included. The target was to briefly point out and summarize the most important relations between the topics. Posture is controlled by the central nervous system (CNS), leading to postural corrections. They are the result of a complex system of mechanisms, controlled by multisensory CNS-integrated inputs. The fine postural system (FPS) aims to maintain balance in the most economical way possible. Stomatognathic system is another functional unit, connected to postural system. The science that studies human posture is called posturology and is a part of integrative medicine. Integrative clinical posturology is a complex, multidisciplinary science that uses various investigation methods in several stages: detailed anamnesis; An in-depth posturological examination - including measurements and tests - for vestibular and visual function and stabilometry. In conclusion, it can be said that posturology is a modern and, at the same time, an ancient constantly evolving, interdisciplinary, "borderline" science. It unites different specialists and helps to build an individual approach to each patient, providing a higher quality of life. There is a connection between vestibular disorders, posturological science and dentistry. Through the methods of the science for posture, occurring disorders can be detected at a much earlier stage and appearance of severe pathology prevented

8.14.Oliveira W, H.Arnautska Closure of edentulous spaces in the posterior region of the lower arch, Rev Clín Ortod Dental Press. 2020 Mar-Abr;19(2):00-0

Summary: The presence of young and adult patients in the orthodontic clinic with edentulous areas in the posterior region of the lower dental arch is not an uncommon situation. Treatment alternatives include space recovery and subsequent prosthetic rehabilitation, or its closure, which can be achieved through reciprocal movement of the anterior and posterior segments or simply by mesializing the lower molars. The latter alternative requires reinforcement of anchorage and a more complex mechanical setup. This article presents, through two clinical cases, biomechanical considerations regarding the force system used in the mesialization of lower molars for space closure in the lower arch, assisted by mini-implants. Results: The spaces were completely closed with good parallelism and minimal root resorption. Conclusion: Closure of edentulous spaces in the posterior region of the mandible is a viable alternative, but it requires the use of more complex biomechanics and a longer treatment time.

Full-text publications in scientific journals and compendiums exceeding the minimum scientometric criteria.

1.Georgiev T., S.Peev, H.Arnautska, A. Gencheva, I. Gerdzhikov, An Evaluation of Three-Dimensional Scans of the Time-Dependent Volume Changes in Bone Grafting Materials, IJSR 2017,6(1); 562-571

Summary: It is essential for the dental implantologist to be aware of the time-dependent volume changes that could occur in the augmentation material. Should the implant placement stage be delayed in time, the dental clinician must select the appropriate bone grafting material for the specific case. Materials and methods : 35 patients were eligible for inclusion, divided into 4 groups, who had a planned maxillary sinus floor augmentation procedure with different bone replacement materials: Group 1 (10 patients)-Bone Ceramic (a synthetic biphasic calcium phosphate material, consisting of hydroxyapatite and βtricalciumphosphatein a ratio of 60:40). Group 2 (10 patients)- Cerabone(Xenogenic bone material from the mineral phase of bovine bone). Group 3 (10 patients)- Maxresorb inject(Calcium phosphate paste, composed of 80% nano-hydroxyapatite aquagel and 20% biphasic calcium phosphate granules). Group 4 (5 patients)- Collagen fleece absorbedin venous blood. Results : The various bone grafting materials applieddemonstrated differentvolume loss over time following a maxillary sinus floor augmentation procedure. The least volume loss over time was found in the application of Xenogenic bovine hydroxyapatite material (XBHM), and most volume contraction was observed in the use of Biphasic calcium phosphate paste material (BCPPM). Conclusions :In maxillary sinus floor augmentation procedures the application of Xenogenic bone material from the mineral phase of bovine bone as an augmentation material has proven to maintain its volume the longest in comparison with other bone grafting materials.

2. Arnautska H., W. Oliveira Leveling with continuous arch or segmented arch technique – problems and suggestions, 4-th BAOS Congress, 2020, Online book, ISBN 978-619-90600-2-5

Summary: Alignment can be realized with continuous arches or with segmented arches. The use of full arch wire may produce a lot of side effects, because we can't predict the forces and moments which the wire will generate. Segmented arches give a better distribution of forces and allowed to predict, the forces and moments developed in relation to all of the brackets. The aim of the article is to show how using the

biomechanical principles of the segmented arch technique in the stage of leveling we can optimize the orthodontic treatment and reduce the side effects of the straight arch technique. Discussion The use of an continuous arch in the leveling and alignment phase has many limitations and contraindications. This is due to the generation of forces and moments that lead to movements that are difficult or impossible to predict. Therefore, the application of a straight wire in the leveling phase is recommended in cases of small crowding, the need for small movements, as well as the use of straight wire in small segments for limited alignment. In all cases with moderate and severe crowding, severe canine or premolar root angulation, canines or incisors extrusion or retraction, molar uprighting, periodontal health compromised teeth, as well as between teeth in low geometries I to III, leveling with segmented arches, loops or cantilevers is highly recommended. Conclusion Every clinician must know the biomechanical principles and the possibilities and limitations of the system he applies. The most effective orthodontic treatment requires the ideal mechanical approach for the individual patient and dental arch. In this aspect, the segmented arch technique can support the straight arch technique in several clinical situations to reduce side effects and optimize orthodontic treatment.

3. Dimova-Gabrovska M., H. Arnautska, D. Konstantinova, N. Tsvetkov, I. Gerdzhikov, T. Georgiev, R. Andreeva: Correlation between deep bite and periodontal changes in cmd-patients, Praemedicis, 2016, 33, 1, 25-28

Summary: The aim of the authors is to investigate possible correlation between the presence of a deep bite and periodontal changes in patients with craniomandibular disorders (CMD). Material for this study are 112 patients with CMD (83 women and 29 men). The conduct of clinical functional diagnostics protocol includes clinical functional diagnostics, documentation of bite in the frontal area – vertical overlap(overbite), short dental and periodontal status (CPITN). The results were processed by the program SPSS for Windows, version 16.00(15.11.2007). The results showed statistically significant correlations between the status of the periodontium and the presence of deep bite (P<0.0001), and between the periodontium and conducted prosthetic treatments (P<0.0001) and orthodontic treatment (P=0.001). In conclusion, the presence of deep bite is a risk factor for development of CDM and suggests periodontal changes associated with zones of plaqueretention factors or dysfunctional overload.

4. Stoykov M, M Milkov, H.Arnautska Posturology and its importance for dental medicine in the pediatric age group. Journal of the Union of Scientists-Varna Medicine and Ecology Series. 2020;25(1).

Summary: Human posture is defined as a particular position in which someone stands or sits, with body limbs and head in certain relation to each other and the environment. Posturology is stated to be a multidisciplinary medical field that examines the major plumb lines in the body and deals with posture. Patients with clinical symptoms of a posture-connected dysfunction report occlusal and tempomandibular joint problems, masticatory muscles tension, neck, back and waist pain, balance maintaining deficiencies, vertigo. The aim of the present study is to stress the importance of the clinical findings of the postural analysis. Scientific databases – MEDLINE, Sci enceDirect, PubMed were used for the research, with the following keywords – posturology, posture, balance, dentistry, orthodontics, treatment, for the period 1990-2020. Around 800 articles and scientific resources were found of which a number not directly associated to the topic of the research were excluded. A total of 25 articles and scientific resources were included after all selecting criteria were met (clinical trials, patients up to 17 years of age including, published protocols for evaluation from medical and postural examinations, confirmed the relationship between bite condition and posture. There were also a small number of teams that did not prove a statistically significant relationship.

5. Stoykov, M., Milkov, M., Arnautska, H. Dynamic analysis of the body's balance with the aid of PODATA platform in patients with vestibular disorders and malocclusions. Scripta Scientifica Medica, 2022.; 54, 35-39.

Summary: Human posture is linked to a certain stable anatomic position between head, body, and upper and lower limbs. Posturology is the science for the human posture. The connections between the vestibular, ocular, stomatognathic, postural, and proprioceptive systems are studied due to their muscular chains interconnections. The present research aims to study the characteristics of the body's balance in patients with vestibular disorders and orthodontic malocclusions, utilizing the PODATA platform. Materials and Methods: A total of 83 patients in the time period November–July 2022 were included. All patients filled out written informed consent forms in order to participate. The study received approval by the Medical University of Varna's Ethics Committee. Patients were also provided with questionnaires in order to assess their symptoms. An ENT specialist and a dentist examined all patients. Patients were divided into several diagnostic groups. Results: When examined on the platform, patients shifted the center of gravity (CoG) of the body more often backwards and to the right side. Most patients with a shift of CoG backwards and to the right had a temporo-mandibular disorder (TMD) on the left side. Female patients were more affected than male ones. In patients who also had a vestibular disorder, CoG of the body was more often shifted backwards and to the right. Thirty-one had a malocclusion. Patients with a change of the middle line and deep bite were the most prevalent and they shifted CoG backward and to the right or only backwards. Conclusion: The presented study confirmed that there is a connection between the postural, stomatognathic and vestibular systems. Disorders in either of the systems results in consecutive changes in the others.