Volume 2, Issue 11, November 2024 ISSN (E): 2938-3765

PREPARATION OF OSTEOPOROTIC WOMEN IN MENOPAUSE FOR DENTAL IMPLANTATION AND PREVENTION OF EARLY COMPLICATIONS

Pulatova Barno Zhurakhonovna,
Tashkent Alfraganus University
wonderland8540@gmail.com.

Achilova Nodira Ganievna
Tashkent Medical Academy
E-mail: achilovanodira16@gmail.com.

Bobamuratova Dilnoza Turdikulovna,
Tashkent Medical Academy
dbobamuratova@mail.ru

Abstract
Frequent referral of elderly patients, especially women, for removal of dental defects with the use of implants makes this problem especially important because asymptomatic, inconspicuous course of osteoporosis can be the cause of complications during treatment with the use of intraosseous implants.

Keywords: Osteoporosis, systemic osteoporosis, dental implantation, menopause Introduction According to the World Health Organization, one of the most important public health problems is osteoporosis, which ranks Fourt.

Introduction

Relevance and relevance of the dissertation topic. Currently, there is a trend in the world aimed at reducing the development of complications during implantological treatment of patients with osteoporosis in menopausal women, the effective use of methods for their prevention, timely sanitation of the oral cavity, and reducing the process of osteoporosis. Today, multifaceted pathology and diagnosis of local manifestations of systemic osteoporosis in the jaw bone tissue are an urgent problem in dentistry.

According to the World Health Organization, one of the most important health problems is osteoporosis, ranking fourth after cardiovascular diseases, cancer and diabetes. Today, multifaceted pathology and diagnosis of local manifestations of systemic osteoporosis in the jaw bone tissue are an urgent problem in dentistry (WHO; 2018) [1].

Particular attention is paid to research aimed at reducing aesthetic defects, improving social adaptation mechanisms, improving treatment standards to improve chewing, speech and psycho-emotional status of patients, and substantiating the effectiveness of rehabilitation methods and means. “This is due to the widespread prevalence of systemic osteoporosis in Europe and America” 2 .

Our country is carrying out comprehensive reforms in terms of developing the medical sector on a modern basis, improving the quality of providing high-quality specialized dental services to the population, including the introduction of highly effective technologies in dental practice, ... increasing the efficiency, quality and popularity of medical care, as well as the formation of a system standardization of medical care, introduction of high-tech diagnostic and treatment methods, support of a healthy lifestyle and disease prevention” [3] . In this regard, it is necessary to expand the scope of research in the direction of increasing the level of identification of the functional state in the oral cavity of patients with edentulous maxillofacial area, improving the quality of surgical practice aimed at eliminating jaws using an integrated approach in combination with dental implantation in patients with osteoporosis.

The degree of knowledge of the problem

According to the definition adopted at the International Conference in Copenhagen (1993), osteoporosis is a systemic disease of the skeleton, characterized by a decrease in bone mass and a violation of the microarchitecture of bone tissue, which increases bone fragility and the likelihood of fractures. This is a very common condition, especially in the over 50 age group, which are prime candidates for implant-supported prosthetics (Peck WA et al., 2013; Melton LJ, 2017; WHO, 2009).

There are various classification schemes for osteoporosis according to pathophysiological, morphological and etiological criteria. Relatively convenient is the classification adopted at the meeting of the Russian Association for Osteoporosis in 1997, which is based on the etiopathogenetic principle and involves distinguishing systemic osteoporosis into primary and secondary (Rodionova S.S., Rozhinskaya L.Ya., 2008).

In our country, a number of authors are working on the development of new methods for restoring complications of osteoporosis and acquired defects of the upper jaw.L. E. Khasanova (2015) found that disruption of the bone structure and function of the alveolar processes in patients with osteoporosis during menopause has an extremely negative effect on the condition of the periodontium, as a result of which, along with unfavorable factors, a situation of rapid tooth loss arises (Komilov Kh.P., Ibragimova M .H., 2020). In the future, according to scientists A. N. Akbarov (2018) and N. L. Khabilov (2021), rapid progressive atrophy of the alveolar processes of the jaws significantly complicates orthopedic treatment with dental implants. The assessment was important not only when installing implants according to the selected treatment plan, but also for predicting the results of their osseointegration.

Therefore, effective implantological treatment of menopausal women with dental implantation, prevention of postoperative complications and timely diagnosis remain among the current areas that require scientific research. To date, there is no consensus regarding the mechanisms of disruption of bone remodeling processes in osteoporosis.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

The purpose of the study is to substantiate the feasibility of use and evaluate the effectiveness of dental implantation in menopausal women with osteoporosis.

Research objectives:

Assess the dental status depending on the degree of osteoporosis in patients during menopause;
identify the nature of the violation of the markers of bone tissue formation, calcitonin and parathyroid hormone, which regulates the balance of calcium in the body;
conduct ultrasound densitometry to determine the condition of the jaw bone tissue in menopausal women with osteoporosis;
to develop an algorithm for planning and treatment and preventive measures to prevent the development of complications after dental implantation in menopausal women.

The subjects of the study were 90 patients aged 4 8-55 years in the menopausal period .

The subject of the study was jaw bone tissue, data from clinical laboratory and radiological research methods, personal data of patients with various indicators and degrees of osteoporosis of alveolar bone tissue during examination and treatment

Research methods. When performing the dissertation research, clinical, biochemical, radiological, anthropometric, ultrasound osteodensitometry and statistical examination methods works.

Fan-shaped divergence of teeth as a result of dystrophic changes in the periodontium was more often observed in patients with osteoporosis (66.2% in group 1 and 48.9% in group 2), while in the control group this figure was 19.1%. Patients with osteoporosis of group 1 complained about tooth mobility in 26.7% of cases, group 2 - in 22.7%, and patients without systemic pathology of bone tissue noted this symptom only in 13.0% of cases.

The data of clinical, laboratory and radiological studies carried out on the basis of the Department of Maxillary Surgery of the TSSI and the Department of Dentistry and Otolaryngology of the TMA in two stages are presented, among 90 patients (all women) aged 4-8-55 years in the menopausal period.

At the first stage of the study, the level of 25(OH)D in the blood serum was determined using a continuous sampling method in patients with neurovegetative and psychoemotional manifestations of CS (menopausal syndrome) in the early period of menopause.

At the second stage, in accordance with the set objectives and a specific goal, 90 patients were examined in the early postmenopausal period, with natural menopause, neurovegetative, metabolic-endocrine and psycho-emotional manifestations of CS of at least 35 points according to the results of the MMI assessment, with a 25(OH)D level of less than 30ng/ml and no contraindications to MHT. A personalized analysis of the results of using MHT for therapeutic purposes with and without colecalciferol (Vit D3) was also carried out.

All patients were comparable in terms of main clinical parameters. During the examination process during the implementation of this study during the second stage of observation, three observation groups were formed.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

Group 1 included 34 patients with vitamin D deficiency, who during the study period took myocalcic as MHT in a continuous mode and vitamin D3 - colecalciferol
(Coledon), as well as Calcium. Group 2 consisted of 32 patients with menopausal osteoporosis who received standard treatment and group 3 included 24 patients without bone tissue pathology. Patients of all three groups were comparable in age (53.12±0.27 years) with a median of 53 (51÷55), duration of menopause (1.93±0.09), average age at menopause (51.21±0. 23 years old). There were no differences in the development of menstrual function among patients in the examination group. Reproductive function was achieved in 98.9% of patients.

A detailed clinical and laboratory examination was carried out in all patients during three visits before the start of therapy and during therapy after 3 and 12 months of treatment.

At the first visit, all patients underwent a comprehensive clinical and laboratory examination.

During the second and third visits, the postoperative period, the main clinical and laboratory parameters were studied and the clinical effectiveness of the treatment was analyzed in the study groups.

Participants were recruited from October to May to minimize seasonal effects on serum 25(OH)D levels.

With the clinical and anamnestic method of research, patients were examined and anamnestic data was collected. The obstetric and gynecological history, clinical picture of the disease, duration of symptoms, heredity, and time of development of menopausal disorders were taken into account. Body type, height, weight, BMI were assessed.

Hormone levels: Parathyroid hormone was determined using a chemiluminescent enzyme immunoassay designed to quantify serum hormones on an IMMULITE 2000 analyzer.

Levels of total calcium, ionized calcium and phosphorus were assessed using a colorometric, photometric direct method, without precipitation, for quantification.

The level of 25(OH)D vitamin D was assessed using the 25(OH)Vitamin D Elisa enzyme immunoassay test.

Clinical examination was carried out according to generally accepted methods. During the examination of patients, the general and dental status was studied.

All patients admitted for treatment had a general and dental history collected to clarify existing functional disorders and establish a prognosis for orthopedic treatment. The main purpose of collecting anamnesis was to identify the etiology of defects, the chronology of dental care provided, to find out previous diseases and the presence of general somatic diseases and allergic reactions.

We used orthopantomography and computed tomography as the main methods of X-ray examination at the stage of preliminary selection of patients, as well as during dynamic observation after implantation. The studies were carried out in the radiology department of TMA 3 clinic.

In our study, to assess the condition of bone tissue, ultrasound densitometry was performed using an Omnisense 7000S device (Sunlight Medical, Israel)

During the period from 2020 to 2022. In the Polyclinic of Surgical Dentistry and Dental Implantology, and Family Clinic No. 58 of the Surgical Dentistry Office, as part of the study, 60 patients were treated using the dental implantation technique.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

Based on the analysis of the examination results, 3 groups of patients were identified for whom implantological treatment using implants was planned. The first group (15 people) included patients diagnosed with postmenopausal osteoporosis (type 1). The second group included 22 patients diagnosed with senile osteoporosis (type 2). The third group (control) consisted of patients without systemic pathology of bone tissue (Table 3).

After conducting research and determining the diagnosis, a treatment plan was drawn up, including implantation surgery followed by orthopedic treatment.

A Pentium IV personal computer was used for registration and statistical processing of the obtained data. Statistical analysis of the results was carried out using Pearson's test %2, two-sided Fisher's test, Student's t-test with a significance level generally accepted for medical research p = 0.05, which corresponded to a 95% probability of conclusion. The software used to solve these problems was Excel 2000 for Windows (Microsoft, USA), BioStat (AnalystSoft).

Clinical and laboratory characteristics of patients with climacteric syndrome in the early period of postmenopause against the background of hypovitaminosis D in a comparative aspect presents the main results obtained through observations and research methods aimed at studying the key manifestations associated with hypovitaminosis **D.**

Analysis of the data obtained showed that the results of examining the levels of parathyroid hormone and vitamin D before taking MHT in all patients indicated the onset of menopause before pharmacological and implantological treatment.

Before the start of therapy, biochemical blood parameters did not go beyond the reference values. The indicators of calcium and phosphorus, glucose and glycosylated hemoglobin in group 2 were statistically significantly ($p<0.05$) different from group 1 and group 3, which indicates a negative impact of vitamin D deficiency on these indicators.

When analyzing the indicators over time, after three months, a decrease in parathyroid hormone ($p<0.001$) and ($p<0.001$), as well as an increase in estradiol ($p<0.001$) was noted in all observed groups, which is natural against the background of the use of Miacalcic (nasal spray) 200 honey dose (total 14 doses 1 fl) and vitamin D (koledan) 500 IU in the form of drops 1-2 drops per day, dissolved in one spoon. Thus, after three months of therapy in patients in all groups, parathyroid hormone decreased by more than 2 times, while the level of calcitonin increased by more than 2 times. This trend of changes persisted throughout the observed period.

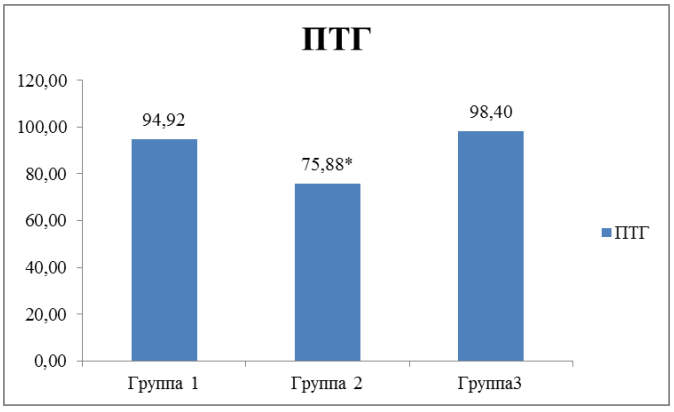


Figure 1. Level of parathyroid hormone in the blood serum of the examined patients (pg/ml)

When comparing the main indicators of quality of life against the background of vitamin D deficiency and insufficiency, we came to the conclusion that the lower the 25(OH)D values, the worse the indicators reflecting the quality of life of women in the early period of postmenopause.

A dental examination showed that the average value of the CP index was 24.2+1.5 in group 1, 22.9+1.8 in group 2 and 15.7+1.2 in group 3. Thus, in women with osteoporosis, the intensity of caries was 1.5 times higher than in somatically healthy individuals ($p < 0.05$).

In patients with osteoporosis, pockets with a depth of more than 6 mm were detected (33.3% of cases in group 1 and 18.2% in group 2), in contrast to the group of patients without systemic pathology of bone tissue, where the depth of periodontal pockets did not exceed 6 mm.

According to the results of X-ray examination, the majority of patients with systemic osteoporosis of group 1 in 23 (79.3%) cases had type IV bone tissue, since in the area of dentition defects there was a thin cortical layer and loose spongy bone. In 13.8% of cases, the bone tissue of the alveolar processes was type III bone tissue, when a thin compact layer covered a spongy layer of sufficient density. In 6.9% of cases, the bone tissue of the alveolar processes corresponded to type II bone tissue - when a thick compact layer and dense spongy bone were preserved.

When studying densitometric data in the area of dentition defects, it was revealed that in patients of group 1, the density in 93.1% of cases was below 300 units. H (units on the Haunsfield scale), and only in 6.9% - ranged from 300 to 500 units. N. However, despite the low density of cancellous bone, almost all patients in group 1 had well-defined cortical bone. This made it possible to carry out bicortical fixation of the implants, ensuring their reliable primary stability, which is so important for osteoporosis.

Besides, It is advisable to use the method of ultrasonic osteodensitometry not only to identify individuals with systemic osteoporosis, but also to study the condition of the bone tissue of the jaws, at the stages of clinical examination of individuals before intraosseous implantation operations.

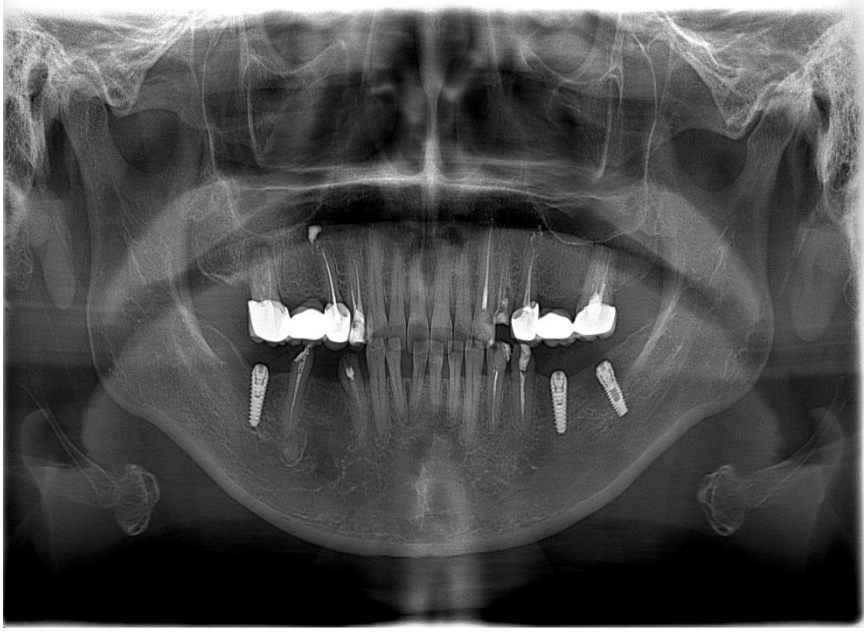
According to our data, in 5 patients of group 1 (33.3%) the activity levels of bone alkaline phosphatase were within normal limits, in 4 (26.7%) there was a decrease in this indicator, and in 6 (40.0%) there was an increase.

In group 2, 18 people, accounting for 81.8%, showed a decrease in alkaline phosphatase activity. The remaining 4 examined (18.2%) in this group had alkaline phosphatase activity within normal limits.

In group 3, all patients had bone alkaline phosphatase activity levels within normal limits.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

The primary stability of the implant and osseointegration of the implant depends on the degree of osteoporosis and on the mineralization of the bone and on the type of implant. In menopausal osteoporosis, the cortical layer is thinner and the spongy layer becomes looser. Because of this, we will not be able to carry out bicortical fixation on the D3-D4 areas of the bone. Spongy fixation is more reliable. riveting with bone, we managed to achieve good primary stability even in the softest porous bone. At the same time, there is no excessive pressure on the surrounding bone tissue, since the implant fits firmly into the bone itself. High primary stability is achieved by increasing the friction force between the implant and bone tissue.



When studying densitometric data in the area of dentition defects, it was revealed that in patients of group 1, the density in 93.1% of cases was below 200 units. H (units on the Haunsfield scale), and only in 6.9% - ranged from 300 to 500 units. N. However, despite the low density of spongy bone substance, almost all patients of groups 1-2 had different areas of bone density depending on the degree of osteoporosis in the upper jaw, distal parts, moderate cortical bone, loose spongy bone D3-D4. This allowed for spongy fixation of the implants, ensuring their reliable primary stability, which is so important for osteoporosis. On the lower jaw and on the upper jaw, in different areas of bone density D1-D2, we performed implantation with different implants with bicortical fixation

Table 1 - Initial values of the main biochemical blood parameters in patients of the study group

Index	Norm	Group 1	Group 2	Group 3
Total calcium	2.2-2.65 mmol/l	2.21±0.04	2.39±0.02 p1***, p2**	2.18±0.06
Calcium ionized	1.13-1.32 mmol/l	1.15±0.01	1.18±0.01 p1*, p2*	1.14±0.01
Phosphorus inorganic	0.81-1.45 mmol/l	1.01±0.02	1.08±0.02 p1***,p2***	1.01±0.02

Good immediate results of implantation in patients of group 1 were obtained in the majority of

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

cases - 25 (86.2%), and unsatisfactory results were noted only in 6.9% of cases. Thus, in this group there were 2 cases of implant disintegration, which had to be removed at the stage of installation of gum formers.

In group 2, 2 implants (5.5%) failed, which were removed during the installation of gum formers, due to their lack of integration with the surrounding bone due to the formation of a layer of fibrous tissue.

In group 3 (control), due to complications that developed during the installation of gum formers, 2 implants (5.2%) were also removed due to lack of osseointegration.

Table 2. Short-term results of implant use Immediate results after treatment

Groups	Good	Satisfactory	Unsatisfactory
1 (n=29)-	25(86.2%)	2(6.9%)	2(6.9%)
2 (n=36);	28 (77.8%)	6 (16.7%)	2(5.5%)
3 (n=38)	31 (81.6%)	5 (13.2%)	2(5.2%)

Analysis of long-term clinical results was carried out after prosthetics for a period of 6 months to 2 years.

In group 1, after prosthetics, only 1 implant (3.4%) was removed after 1.5 years of operation due to significant resorption around its intraosseous part.

In group 2, up to 2 years after surgery, unsatisfactory treatment results were observed in 3 cases (8.3%).

In group 3, an unsatisfactory result was noted in the area of 2 implants (5.2% of cases).

Thus, in patients with osteoporosis, the percentage of implant removal was slightly higher than in patients without pathology of the skeletal system, but the differences were insignificant, which proves the effectiveness of the treatment regimen we developed for patients with osteoporosis.

X-ray examination showed that by the time of installation of orthopedic structures, in all observed groups, both horizontal and vertical resorption of bone tissue in the implant area was clinically insignificant or absent.

Six months after the start of full functioning of the implants, radiographic examination also did not show significant bone resorption in all 3 groups.

2 years after implantation, in patients of group 1, horizontal resorption of bone tissue in the area of the bone-implant interface was noted in 41.3% of cases. Its average value was 0.8±0.2 mm.

The presence of radiologically visible resorption in patients of group 2 was observed in 55.6% of implantation sites. The average resorption value was 1.3±0.2 mm.

In patients included in group 3, horizontal resorption was observed in 52.6% of cases and averaged 0.7±0.1 mm.

When analyzing the results of ultrasonic osteodensitometry in patients of all groups, it was found that the density of bone structures recorded by ultrasonic osteodensitometry in the area of the apex, middle and base of the implant body has the highest values in the area of the base of its body. This feature is also characteristic of the density of bone structures of intact teeth.

The data obtained indicate that with good results of orthopedic treatment using implants, patients have almost the same bone density in the peri-implant area and adjacent areas. Knowledge of the

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

design features of the implant allows you to achieve not only good primary stability, but also significantly reduce the number of operations, reduce injuries and speed up rehabilitation time

CONCLUSIONS

1. Among patients with osteoporosis, the intensity of caries is 1.5 times higher, and in the structure of the PCI index the proportion of extracted teeth is significantly higher than in somatically healthy individuals. Patients with osteoporosis showed a more severe degree of periodontal tissue damage compared to the control group, despite the same level of oral hygiene. Optical density of the spongy substance of the alveolar processes in patients with menopausal osteoporosis is - 150 ± 20 units. N, there are 30% fewer patients without pathology of the skeletal system, which indicates a sharp decrease in the mineralization of the bone tissue of the jaws in osteoporosis.
2. The most pronounced biochemical disturbances are observed in patients with postmenopausal osteoporosis. In women with menopausal osteoporosis after applying the proposed therapy after 3 months, parathyroid hormone decreased by 26.7%, calcitonin and vitamin D, in turn, increased by 40.0% and 200-300 IU, respectively, which is a positive factor when carrying out dental implantation and preventing complications in patients with this pathology.
3. In patients with osteoporosis of group 1, the speed of passage of the sound wave is reduced, on average, by 31.1%, and in patients with osteoporosis of group 2, by 41.6%, compared with the group of people without systemic bone tissue pathology. The data obtained allow us to judge the decrease in the amount of bone substance of the jaws per unit volume in patients with osteoporosis
4. Long-term results of implantation indicate that in patients with menopausal osteoporosis, subject to gentle implant installation techniques and peri-implantation drug therapy, a favorable treatment outcome is noted in 91.7-93.2% of cases.

References

1.Rizzoli R., Bianchi M.L., Garabédian M., McKay H.A., Moreno L.A. Maximizing bone mineral mass gain during growth for the prevention of fractures in the adolescents and the elderly // Bone. 2010. Vol. 46. № 2. P. 294–305.

2. Eisman J.A. Pharmacogenetics of the vitamin D receptor and osteoporosis // Drug Metab. Dispos. 2019. Vol. 29. № 4. Pt. 2. P. 505–512.

3.Crawford S.L., Casey V.A., Avis N.E. et al. Longitudinal study of weight and menopause transition: results from the Massachusetts women health study // Menopause. - 2020, Apr; Vol.7(2): 96-104.

4.Dargent-Molina P., Poitiers F., Breat G. et al. In elderly women weight is the best predictor of a very low bone mineral density: evidence from the EPIDOS study // Osteoporosis Int. 2017. - Vol.l 1 (10): 881-888.

5.Delmas P.D., Eastell R., Gamero P. et al. The use of biochemical markers of bone turnover in osteoporosis // Osteoporosis Int. — 2015. - Vol.l 1 (Suppl. 6): S2-S17

6. Smetnik V.P. Postmenopausal osteoporosis // Medicine climacteria / Ed. V.P. Smetnik. Yaroslavl: LLC "Publishing House Litera", 2016. pp. 656-686.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

7. Grados F., Brazier M., Kamel S., Duver S., Heurtebize N., Maamer M., Mathieu M., Garabédian M., Sebert J.L., Far- dellone P. Effects on bone mineral density of JMEA Journal of Modern Educational Achievements 2023, Volume 3 https://scopusacademia.org/ - 126 - calcium and vitamin D supplementation in elderly women with vitamin D deficiency // Joint Bone Spine. Vol. 70. No. 3. P. 203-208.

8. Achilova N.G. Pulatova B.J. "Pre-operative training of patients with osteoporosis during premenopause when planning dental implantation" 2021.12.29 central asian journal of medicine No. 11; 47-58p

9. Achilova N.G. Pulatova B.J. "To the question of preparation of patients with osteoporosis during the premenopause when planning dental implantation" 2022/1/17oriental journal of medicine and pharmacology No. 10 82-92 p https://www/supportscience.uz / index.php./odmp.

10. Achilova N.G. Pulatova B. J. "Medical correction in the planning of dental implantation in patients with osteoporosis in the menopausal period". Materials of the international scientific and practical online conference "Actual problems of maxillofacial surgery" Tashkent 2021 No. 3 pp 56-59.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5