

S.T. Rustamian, I.P. Katerenchuk  
Ukrainian Medical Stomatological Academy, Poltava

**COMPARATIVE ANALYSIS OF CLINICAL MANIFESTATIONS OF ANXIETY  
AND DEPRESSION IN PATIENTS UNDERGOING RENAL REPLACEMENT THERAPY WITH  
CONCOMITANT TYPE 2 DIABETES MELLITUS**

e-mail: satenik.rustamyan.92@gmail.com

This article presents the comparative analysis results on clinical manifestations of anxiety and depression in patients undergoing renal replacement therapy, namely programmed hemodialysis, taking into account the concomitant type 2 diabetes mellitus. Patients undergoing renal replacement therapy, namely, program hemodialysis, have a higher risk of anxiety and depressive disorders than patients with chronic stage I-II kidney disease undergoing conservative therapy. Concomitant diabetes mellitus in patients undergoing renal replacement therapy causes an increase in the frequency of anxiety and depression.

**Keywords:** chronic kidney disease, diabetes mellitus, program hemodialysis, anxiety, depression.

**С.Т. Рустамян, І.П. Катеренчук**

**ПОРІВНЯЛЬНИЙ АНАЛІЗ КЛІНІЧНИХ ПРОЯВІВ ТРИВОГИ ТА ДЕПРЕСІЇ  
У ХВОРИХ, ЯКІ ПЕРЕБУВАЮТЬ НА НИРКОВО-ЗАМІСНІЙ ТЕРАПІЇ,  
З УРАХУВАННЯМ НАЯВНОСТІ У НИХ ЦУКРОВОГО ДІАБЕТУ 2-ГО ТИПУ**

У даній статті представлені результати порівняльного аналізу клінічних проявів тривоги та депресії у хворих, які перебувають на нирково-замісній терапії, а саме на програмному гемодіалізі, з урахуванням наявності у них цукрового діабету 2-го типу. У хворих, що перебувають на нирково-замісній терапії, а саме на програмному гемодіалізі, наявний більш високий ризик тривожно-депресивних розладів, ніж у хворих з хронічною хворобою нирок I-II стадії, яким проводиться консервативна терапія. Спутній цукровий діабет у пацієнтів, які перебувають на нирково-замісній терапії, обумовлює зростання частоти розвитку тривоги і депресії.

**Ключові слова:** хронічна хвороба нирок, цукровий діабет, програмний гемодіаліз, тривога, депресія.

*The work is a fragment of the research project "Study of the combined effect assessment of cardiovascular risk factors on the comorbid course of arterial hypertension, coronary heart disease and chronic kidney disease, features of prevention and rehabilitation", state registration No. 0119U102851.*

Chronic kidney disease (CKD) affects about 10.0–15.0% of adults worldwide, it is a common and important non-communicable disease that affects 200 million people [11]. Not least important role in increasing the number of patients with CKD is played by such a comorbide disease as diabetes mellitus, which often leads to diabetic nephropathy and, accordingly, renal failure [1]. The prevalence of this debilitating disease is expected to increase further due to the global diabetes mellitus (DM) epidemic. According to the World Health Organization, by the end of 2019, about 422 million people worldwide suffer from diabetes mellitus, especially in low- and middle-income countries, and 1.6 million deaths are directly related to diabetes every year. For the latest few decades, the number of cases and the prevalence of diabetes have been steadily increasing [14].

Treatment (i.e. diet and pharmacotherapy) at the pre-dialysis stage is aimed at slowing the increase in the severity of kidney damage, prevention or treatment of complications and comorbidities. At stage V CKD, renal replacement therapy (RRT), namely dialysis or kidney transplantation, becomes necessary to sustain life. As the number of people suffering from CKD increases, the number of patients who need RRT grows exponentially.

The mental health of patients with CKD is constantly traumatized by such iatrogenic factors as awareness of life-threatening diagnosis and the need for lifelong treatment, use of dialysis therapy and overcoming transient / unsuccessful treatment attempts, awareness of the consequences and complications [7, 13, 15]. It is in view of a number of the above components, the paramount importance is acquired by psychological problems caused by the disease and its treatment [2, 5, 6 12,].

A number of studies have demonstrated the close correlation between anxiety-depressive disorders and stage V CKD [3, 10]. Therefore, it is important to understand the correlation between anxiety and depression, their modification in patients with stage V CKD and type 2 DM, which determined the purpose of the present study.

**The purpose** of the study was to perform a comparative analysis of clinical anxiety and depression manifestations in patients undergoing renal replacement therapy, namely programmed hemodialysis, taking into account the presence of type 2 diabetes mellitus.

**Materials and methods.** After obtaining written consent to undergo interviews in accordance with the principles of the Human Rights Declaration of Helsinki, the Council of Europe Convention on Human Rights and Biomedicine, relevant laws of Ukraine and international acts in a randomized manner with prior stratification, the presence of CKD (Order of the MOH of Ukraine No. 89 dated 11.02.2016 “On the provision of medical care to patients with chronic kidney disease stage V with the use of hemodialysis or peritoneal dialysis”), type 2 diabetes mellitus (Order of the MOH of Ukraine No. 1118 dated 21.12.2012) and its absence, the study involved 93 patients who were treated in 2019 at the Center for Nephrology and Dialysis KP “Poltava M.V. Sklifosovsky Regional Clinical Hospital of PCC” (62 (66.7 %) women and 31 (33.3 %) men).

Depending on the CKD stage, two groups of patients were formed – 44 patients (47.3 %; 24 (25.8 %) women and 20 (21.5 %) men) undergoing program hemodialysis (experimental group – EG) and 49 patients (52.7 %; 38 (40.9 %) women and 11 (11.8 %) men) with CKD stage I-II (control group - CG), in each of them patients being stratified into two subgroups (table .1): with the presence of type 2 diabetes mellitus (20 and 26 patients, respectively) and without it (24 and 23 patients, respectively) (table 1).

Table 1

**Distribution of patients with stage V CKD undergoing programmed hemodialysis (experimental group) and with stage I-II CKD (control group) (n;%)**

| EG patients          |                         | CG patients          |                         |
|----------------------|-------------------------|----------------------|-------------------------|
| With DM (EG 1), n; % | Without DM (EG 2), n; % | With DM (CG 1), n; % | Without DM (CG 2), n; % |
| 20 (21.5 %)          | 24 (25.8 %)             | 26 (28.0 %)          | 23 (24.7 %)             |

Anxiety-depressive disorders were determined using the HADS hospital scale of anxiety and depression, which consisted of two scales: anxiety and depression, which included 7 questions. The criteria for the degree of anxiety and depression were the next: up to 7 points –no signs of anxiety/depression; 8–10 – subclinically pronounced signs of anxiety and/or depression; more than 10 points – clinically pronounced anxiety and / or depression.

Statistical analysis was performed using Microsoft Excel software, using statistical calculation options (standard deviation, arithmetic mean, standard error). The probability of differences between the comparison groups was determined using the parametric Student's test.

**Results of the study and their discussion.** The researchers interviewed patients after signing an informed consent using a description of depression and anxiety, and the patients completed the Hospital Anxiety and Depression Scale (HADS) on their own in a secluded place.

Usually in the analysis of the patient's physical condition assessment, quality of life, the symptoms of anxiety and depression are not included as a clinical parameter in the assessment of patients with RRT. However, the results of our study showed a significant percentage of anxiety and / or depression in patients with CKD, and the indices of anxiety and / or depression have significant differences in patients who do not undergo RRT, and those who are subject to programmed hemodialysis (table 2) although the averaged data do not fully characterize the features of the anxiety and depression manifestations in patients of the experimental and control groups.

Table 2

**Indices of anxiety and depression in the experimental and control groups (n (%); M±m; p)**

| Indices/Groups                  | Group 1                                       | Group 2                | Group 3                                       | Group 4                |
|---------------------------------|---|------------------------|---|------------------------|
|                                 | EG 1,<br>n (%), M±m, p                        | CG 1,<br>n (%), M±m, p | EG 2,<br>n (%), M±m, p                        | CG 2,<br>n (%), M±m, p |
| No signs of anxiety             | 7 (35.0)<br>4.6±0.4<br>p <sub>1</sub> =0.01   | 18 (69.3)<br>3.2±0.4   | 14 (58.3)<br>4.7±0.4<br>p <sub>3</sub> <0.001 | 18 (78.3)<br>1.7±0.5   |
| Subclinical stage of anxiety    | 11 (84.6)<br>9.1±0.3<br>p <sub>2</sub> <0.001 | 8 (30.7)<br>7.2±0.5    | 10 (41.7)<br>8.3±0.5<br>p <sub>4</sub> <0.05  | 5 (21.7)<br>7.2±0.4    |
| Clinical stage of anxiety       | 2 (15.4)<br>12.5±0.5                          | -                      | -   | -                      |
| No signs of depression          | 11 (55.0)<br>4.4±0.4<br>p <sub>1</sub> >0.05  | 21 (80.8)<br>3.8±0.8   | 14 (58.3)<br>5.3±0.8<br>p <sub>3</sub> =0.001 | 22 (95.7)<br>1.8±0.7   |
| Subclinical stage of depression | 6 (30.0)<br>9.6±0.4<br>p <sub>2</sub> <0.05   | 5 (19.2)<br>8.4±0.5    | 10 (41.7)<br>7.3±0.5                          | 1 (4.3)                |
| Clinical stage of depression    | 3 (15.0)<br>13.3±0.5                          | -                      | -   | -                      |

Note: p<sub>1,2</sub> – comparison with indices of group 2; p<sub>3,4</sub> – comparison with indices of group 4.

Frequency of the subclinical stage of anxiety detection in EG patients with DM and those of CG with DM had a statistically significant difference ( $p < 0.001$ ). The indices of the subclinical stage of anxiety in the EG patients without diabetes mellitus and those of the CG without diabetes mellitus also had a statistically significant difference ( $p \leq 0.05$ ). The detection frequency of the subclinical stage of depression in patients with DM and those of CG with DM had a statistically significant difference ( $p < 0.05$ ). Whereas the frequency of depression in the EG patients without diabetes mellitus and those of the CG without DM a statistically significant difference was registered in the frequency of depression ( $p = 0.001$ ). As it is shown in table 2, the clinical stage of anxiety and depression was only detected in EG1 (15.4 % and 15.0 %, respectively), which indicated the impact of diabetes mellitus and its complications on the psychological state of the patient.

The level of anxiety and depression among patients undergoing programmed hemodialysis is similar to that of cancer patients, as chronic kidney disease, although not a fatal disease in itself, leads to significant changes in the daily routine and quality of life in patients and their families. The available literature data indicate an increased level of anxiety and depression in patients with CKD. The level of anxiety and depression in patients with the end-stage renal failure, according to various researchers, ranged from 12.0 % to 52.0 %. However, the exact figure remains unclear, mainly due to the limited number of studies, the different sample population, and the different screening methods used in the studies. Studies using the Statistical Manual of Mental Disorders (SCID) to diagnose anxiety and depressive disorders have shown that anxiety rates range from 0.0 % to 45.7 % [7, 11].

Common complaints of hemodialysis patients may be manifestations of anxiety disorder, including palpitations, indigestion disorders, numbness / tingling sensation in the extremities, tremor of the extremities, increased nervousness, unmotivated shortness of breath, increased sweating, etc. Frequently, irrational patients' behavior or behavior that leads to conflicts with medical staff and physicians, for example, can be a major manifestation of anxiety disorder. Given the prevalence of anxiety disorders in patients with programmed hemodialysis, it is important to assess such conditions as part of the overall psychosocial assessment. Psychosocial assessment itself should not be based on simple physician questions to patients about their mood or the presence / absence of anxiety, because for many patients with programmed hemodialysis their anxiety is a "normal", "standard" state for them and they can not easily determine that this condition is pathological.

In our study, in patients undergoing programmed hemodialysis with DM, signs of anxiety were found in 65.0 % of cases, while in patients without diabetes mellitus – 41.7 %, which confirms the impact of DM on the underlying disease course, quality of life, social maladaptation (table 2, [15]).

Table 3

**Distribution of patients according to the questionnaire data results in the hospital scale of anxiety and depression HADS (n,%)**

| Indices                            | EG 1,<br>n (%)                                | CG 1,<br>n (%)                                  | EG 2,<br>n (%)                                 | CG 2,<br>n (%)                                  |
|------------------------------------|---|---|--|---|
| No signs of anxiety                | 7 (35.0)<br>fem.: 4 (57.1)<br>male: 3 (42.9)  | 18 (69.3)<br>fem.: 14 (77.8)<br>male.: 4 (22.2) | 14 (58.3)<br>fem.: 5 (35.7)<br>male.: 9 (64.3) | 18 (78.3)<br>fem.: 14 (77.8)<br>male.: 4 (22.2) |
| With signs of anxiety (general)    | 13 (65.0)<br>fem.: 7 (53.8)<br>male: 6 (46.2) | 8 (30.7)<br>fem.: 6 (75.0)<br>male.: 2 (25.0)   | 10 (41.7)<br>fem.: 8 (80.0)<br>male.: 2 (20.0) | 5 (21.7)<br>fem.: 4 (80.0)<br>male.: 1 (20.0)   |
| Subclinical stage of anxiety       | 11 (84.6)<br>fem.: 5 (45.5)<br>male: 6 (54.5) | 8 (30.7)<br>fem.: 6 (75.0)<br>male: 2 (25.0)    | 10 (41.7)<br>fem.: 8 (80.0)<br>male: 2 (20.0)  | 5 (21.7)<br>fem.: 4 (80.0)<br>male: 1 (20.0)    |
| Clinical stage of anxiety          | 2 (15.4)<br>fem.: 2 (10.0)<br>male: 0 (0.0)   | -   | -  | -   |
| No signs of depression             | 11 (55.0)<br>fem.: 4 (36.4)<br>male: 7 (63.6) | 21 (80.8)<br>fem.: 16 (76.2)<br>male: 5 (23.8)  | 14 (58.3)<br>fem.: 6 (42.9)<br>male: 8 (57.1)  | 22 (95.7)<br>fem.: 17 (77.3)<br>male: 5 (22.7)  |
| With signs of depression (general) | 9 (45.0)<br>fem.: 7 (77.8)<br>male: 2 (22.2)  | 5 (19.2)<br>fem.: 4 (80.0)<br>male: 1 (20.0)    | 10 (41.7)<br>fem.: 7 (70.0)<br>male: 3 (30.0)  | 1 (4.3)<br>fem.: 1 (100.0)<br>male: 0 (0.0)     |
| Subclinical stage of depression    | 6 (30.0)<br>fem.: 5 (71.4)<br>male: 1 (50.0)  | 5 (19.2)<br>fem.: 4 (80.0)<br>male: 1 (20.0)    | 10 (41.7)<br>fem.: 7 (70.0)<br>male: 3 (30.0)  | 1 (4.3)<br>fem.: 1 (100.0)<br>male: 0 (0.0)     |
| Clinical stage of depression       | 3 (15.0)<br>fem.: 2 (66.7)<br>male: 1 (33.3)  | -   | -  | -   |

In CG with DM, signs of anxiety were found in 8 patients (30.8 %). In patients with CKD stage I-II without diabetes who underwent conservative treatment, anxiety disorders were detected in 5 patients (21.7 %). This figure is in line with data by other researchers who used both the HADS scale and other questionnaires [ 4, 8]. This is due to DM, which led to kidney damage, the need for constant insulin administration (in the case of hemodialysis) or taking sugar-lowering antidiabetic drugs (at the pre-dialysis stage), the understanding that diabetes is incurable.

According to the literature, compared to the general population of patients with stage V CKD, there is more than five-fold incidence of depression [5]. A pronounced feeling of energy potential loss (anergy) in patients receiving treatment with programmed hemodialysis may also be a consequence of depression. When studying the level of depression, it was found that a higher level was observed in patients with CKD than in patients with other chronic non-renal diseases and it significantly reduced the quality of life in these patients, and increased mortality [2, 6, 11].

According to various data, the prevalence of depression in patients with CKD ranges from 20.0 % to 30.0 % [4, 7]. In terms of treatment with programmed hemodialysis, depression is similar to a response to real, threatening or imaginary loss due to persistent depression, feelings of helplessness, low self-esteem. It is noteworthy that the assessment method used to detect depression may affect the assessment of prevalence. This was demonstrated in a meta-analysis of 249 studies performed by S. Palmer et. al. [9]. In patients with dialysis, the prevalence of depression made 22.8 % based on the use of clinical interviews (e.g., SCID and diagnostic interviews). However, when self-assessment or physician's evaluation questionnaires (e.g., HADS) were used, other results were obtained [14]. Thus, in our study in EG with DM, depression was detected in 9 patients (45.0 %), of which: 6 patients (30.0 %) had a subclinical stage of depression and 3 patients (15.0 %) – a clinical stage, in the other 11 patients (55.0 %) no signs of depression were detected. At that time in EG without diabetes 10 patients (41.7 %) had a subclinical stage of depression, in the rest 14 patients (58.3 %) of this group there are no signs of depressive disorders. Assessing the depression signs' presence in CG with diabetes, it was found that the subclinical stage of depression is present in 5 patients (19.2 %) while in CG without DM – only in 1 patient (4.3 %), which confirms the negative impact of DM on the psychological state in patients with renal pathology. It is characteristic that in patients with CKD stage V there was a combined anxiety-depressive disorder, i.e., there were both anxiety disorders and depressive manifestations, whereas in patients with CKD stage I-II mostly anxiety only was observed.

The questionnaires analysis revealed gender differences, which lied in the fact that mild to moderate anxiety and depression were more common in women. Thus, in EG1, out of 9 patients who had signs of depression, 7 (77.8 %) were female patients. In our opinion, this is due to the fact that women are more emotionally labile, embarrassed, more irritable. Looking at the answers of patients to the questions in the questionnaires, we can conclude that among the clinical signs of anxiety and depression the first place was occupied by anhedonia - loss of ability to enjoy life, narrowing of interests, reduced social activity, mood deterioration, sleep disturbances, pessimistic assessment of the future, lack in feeling of rest after waking up, which are real manifestations of depression. As a result, women had more pronounced and severe somatic damage.

### Conclusion

Anxiety and depressive disorders are the most common affective disorders among patients undergoing renal replacement therapy. Patients receiving renal replacement therapy, namely programmed hemodialysis, have a higher risk of anxiety and depressive disorders than patients with chronic kidney disease stage I-II, who undergo conservative therapy. Diabetes mellitus in patients undergoing renal replacement therapy and in patients with stage I-II chronic kidney disease causes an increase in the anxiety and depression incidence. To better control anxiety and depression, to improve the quality of life in patients undergoing programmed hemodialysis, to reduce mortality, the studies should be performed at public, private organizations that manage dialysis centers, and strategies should be adopted to reduce the prevalence of anxiety and depression where it occurs. most common and relevant.

### References

1. Katerenchuk IP, Yarmola TI. Khronichna khvoroba nyrok. Poltava. Navchalnyi posibnyk. 2012: 13–18. [in Ukrainian]
2. Alqarni AM, Alghamdi EA, Alaqil NA, Alzahrani AH, Aldhfyah YM. Prevalence of anxiety and depression and its related influencing factors among patients with end-stage. International Journal of Medical Research & Health Sciences. 2019; 8(1):55–62.
3. Eugene PR, Eliseo G, Seungyoung H, Noori K, Marcello T. Prevalence and Persistence of Uremic Symptoms in Incident Dialysis Patients. *Kidney360* 2020 Feb; 1(2):86–92. DOI 10.34067/kid.0000072019.
4. Finkelstein FO, Wuerth D, Finkelstein SH. An approach to addressing depression in patients with chronic kidney disease. *Blood Purif.* 2010; 29:121–4. DOI: 10.1159/000245637

5. Goh ZS, Griva K. Anxiety and depression in patients with end-stage renal disease: impact and management challenges - a narrative review. *Int J Nephrol Renovasc Dis.* 2018; 11:93–102. DOI: 10.2147/IJNRD.S126615
6. Mirzaei M, Ardekani SMY, Mirzaei M, Dehghani A. Prevalence of depression, anxiety and stress among adult population: results of YAZD health study. *Iran J Psychiatry.* 2019 Apr; 14(2): 137–46.
7. Namkee GC, John ES, Diana MD, Mark EK. Health Care Utilization Among Adults With CKD and Psychological Distress. *Kidney Med.* 2019 Jul 13;1(4):162–170. DOI: 10.1016/j.xkme.2019.07.002.
8. Nishank J, Fei W, Monica K, Anuluwapo A, Jerry W. Association of platelet function with depression and its treatment with sertraline in patients with chronic kidney disease: analysis of a randomized trial. *BMC Nephrol.* 2019 Oct 29; 20(1):395. DOI: 10.1186/s12882-019-1576-7.
9. Palmer S, Vecchio M, Craig JC. Prevalence of depression in chronic kidney disease: systematic review and meta-analysis of observational studies. *Kidney Int.* 2013; 84(1):179–191. DOI: 10.1038/ki.2013.77
10. Prelicjevic VT, Osthus TB, Sandvik L. Psychiatric disorders, body mass index and C-reactive protein in dialysis patients. *Gen Hosp Psychiatry.* 2011; 33(5):454–461. DOI: 10.1016/j.genhosppsych.2011.06.010
11. Raymond KH, Neil RP. Recent trends in the prevalence of chronic kidney disease: not the same old song. *Curr Opin Nephrol Hypertens.* 2017 May; 26(3):187–196. DOI: 10.1097/MNH.0000000000000315.
12. Shervin A. Chronic Kidney Disease, Anxiety and Depression among American Blacks; Does Ethnicity Matter? *Int J Travel Med Glob Health.* Fall 2014; 2(4):133–139.
13. Um EK. Gender role in anxiety, depression and quality of life in chronic kidney disease patients. *Pak J Med Sci.* Jan-Feb 2020; 36(2):251–254. DOI: 10.12669/pjms.36.2.869.
14. World Health Organization. Diabetes [Internet]. Available at: [https://www.who.int/health-topics/diabetes#tab=tab\\_1](https://www.who.int/health-topics/diabetes#tab=tab_1)
15. Zhong SG, Konstadina G. Anxiety and depression in patients with end-stage renal disease: impact and management challenges - a narrative review. *Int J Nephrol Renovasc Dis.* 2018 Mar 12; 11:93–102. DOI: 10.2147/IJNRD.S126615.

Стаття надійшла 15.02.2020 р.

DOI 10.26724/2079-8334-2021-1-75-148-151

UDC 616.314.1. –073.7(477.–5425)

**Yu.O. Slyngo, I.I. Sokolova, N.M. Udovychenko, V.V. Oleynichuk**  
**Kharkiv National Medical University, Kharkiv**

### **CERTAIN STRUCTURAL CHARACTERISTICS OF DENTITION SMALL DEFECTS IN THE ADULT POPULATION OF KHARKIV**

e-mail: sdent\_irina@ukr.net

The article presents data obtained from the orthopantomogram analysis of 1269 patients aged 18 to 84 years of both genders for such a structural feature of the dental arches' small defects as their length (absence of one, two or three teeth). It was found that the maximum number of defects was with the absence of one tooth (1265 defects, 66.1 %), and the smallest share of defects was the length of three teeth (149 дефектів, 7.8 %). There is a direct correlation between the examined persons' age increase and the number of simultaneous presence of two, three, four, five and even six small defects of the dental arches with the absence of one to three teeth. Also, when analyzing the structure of the dentition small defects, which had different lengths, no significant gender-based differences were found.

**Key words:** dentitions, partial secondary adentia, small dentition defects, structure.

**Ю.О. Слинго, І.І. Соколова, Н.М. Удовиченко, В.В. Олейнічук**

### **ДЕЯКІ СТРУКТУРНІ ХАРАКТЕРИСТИКИ МАЛИХ ДЕФЕКТІВ ЗУБНИХ РЯДІВ ДОРΟΣЛОГО НАСЕЛЕННЯ М. ХАРКІВА**

У статті наведені дані аналізу ортопантограм 1 269 пацієнтів від 18 до 84 років обох статей за такою структурною ознакою малих дефектів зубних рядів, як їх протяжність (відсутність одного, двох або трьох зубів). Встановлено, що максимальна кількість дефектів була з відсутністю одного зуба (1265 дефектів, 66,1 %), а найменша частка дефектів мала протяжність на три зуба (149 дефектів, 7,8 %). Встановлено прямий кореляційний зв'язок між збільшенням віку обстежених осіб і кількістю одночасної наявності двох, трьох, чотирьох, п'яти і навіть шести малих дефектів зубних рядів з відсутністю від одного до трьох зубів. Також при аналізі структури малих дефектів зубних рядів, які мали різну протяжність, не було встановлено істотних відмінностей за гендерною ознакою.

**Ключові слова:** зубні ряди, часткова вторинна адентія, малі дефекти зубних рядів, структура.

*The article is a fragment of the research projects "Optimization of methods for diagnosis and treatment of major dental diseases" (state registration No. 0119U002899) and "Formation and implementation of modern scientific approaches to the diagnosis, treatment and prevention of dental pathology in children and adults" (state registration No. 0118U000939).*

The presence of defects in the dentition has a direct negative impact on the harmonious functioning of the entire dental system. Thus, the violation of the dentition integrity is the basis for a whole chain of disorders from the destruction of occlusal relationships, gradual occurrence of various deformations to the development of periodontal disease, temporomandibular joint dysfunction and changes in the facial skeleton or posture. No less significant are the emotional and psychological consequences of the presence