

Analysis of the State of Psycho-Emotional Adaptation of Patients with Various Forms of Oncological Diseases of the Maxillofacial Region at Certain Stages of Their Treatment and Rehabilitation Process

[Oleksandr Belikov](#)^{*}, Oleksandra Roshchuk , Natalia Belikova , Liudmyla Belikova , Maksym Bernik

Posted Date: 24 March 2026

doi: 10.20944/preprints202603.1917.v1

Keywords: depression; oncological diseases; rehabilitation; anxiety; maxillofacial region



Preprints.org is a free multidisciplinary platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This open access article is published under a [Creative Commons CC BY 4.0 license](#), which permit the free download, distribution, and reuse, provided that the author and preprint are cited in any reuse.

Disclaimer/Publisher's Note: The statements, opinions, and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.

Article

Analysis of the State of Psycho-Emotional Adaptation of Patients with Various Forms of Oncological Diseases of the Maxillofacial Region at Certain Stages of Their Treatment and Rehabilitation Process

Oleksandr Belikov ^{1,*}, Oleksandra Roshchuk ¹, Nataliia Belikova ¹, Liudmyla Belikova ² and Maksym Bernik ³

¹ Bukovinian State Medical University Ministry of Health of Ukraine, Chernivtsi, postal code 58002, Ukraine

² Private Dental Practice, Chernivtsi, postal code 58008, Ukraine

³ Chernivtsi Military Hospital, Chernivtsi Region, postal code 58001, Ukraine

* Correspondence: belikovsasha@ukr.net; Tel.: +38 (050) 196-93-00

Abstract

Background: Despite the achievements of psycho-oncology, the number of studies devoted to the psycho-emotional characteristics of the course of oncological diseases remains limited, especially with regard to the dynamics of psycho-emotional changes at different stages of the treatment and rehabilitation process and their connection with the localization of neoplasms and the degree of functional and aesthetic disorders. In this context, this problem is relevant and requires further comprehensive research. **Objective:** This study aimed to analyze the dynamics of the psychoemotional state of patients with tumor diseases of the maxillofacial region at different stages of treatment and rehabilitation, as well as to determine its dependence on tumor localization, the severity of anatomical, functional, and aesthetic disorders, and their influence on the treatment and rehabilitation process.. **Methods:** We examined 85 patients with oncological lesions of the maxillofacial region. To assess their psychoemotional state, we used a modified anxiety and depression assessment scale and an integral psychoemotional index (IPEI) at the time of hospitalization, in the preoperative and postoperative periods. The results were evaluated using statistical methods. **Results:** The most pronounced psychoemotional disorders were detected at hospitalization: anxiety – 12.4 points, depression – 10.8 points, IPEI – 2.31 points. In the preoperative stage, these indicators decreased significantly to 10.6, 9.1, and 1.87 points, respectively ($p < 0.05$). The lowest values were recorded after surgical treatment: anxiety level – 7.3 points, depression level – 6.2 points, IPEI – 1.28 points ($p < 0.01$). A statistically significant dependence on tumor localization was found: the highest IPEI values were observed in patients with lesions of the nasal cavity and maxillary sinus (2.61 units), intermediate values – in lesions of the upper jaw and alveolar process (1.93 units), and the lowest in lesions of the hard and soft palate (1.42 units) ($p < 0.01$). The indicated levels of anxiety and depression were significantly higher in women and younger patients. **Conclusions:** Patients with oncological lesions of the maxillofacial region showed a significant decrease in anxiety and depression levels on the HADS scale, starting from the stage of hospitalization to the postoperative rehabilitation period.

Keywords: depression; oncological diseases; rehabilitation; anxiety; maxillofacial region

1. Introduction

Oncological diseases of the maxillofacial region (MFR) are among the most complex problems of modern medicine, requiring a comprehensive multidisciplinary approach to diagnosis, treatment, and rehabilitation. In addition to severe anatomical and functional disorders, these pathologies are

accompanied by serious psycho-emotional disorders, the degree of which depends on the stage of treatment, the localization of the tumor process, and the level of disruption of vital functions [1].

The specific localization of neoplasms in the facial area, which directly affects the patient’s speech, swallowing, breathing, and appearance, causes a pronounced psychotraumatic effect and creates a high risk of developing anxiety-depressive and compensatory disorders. After surgical interventions, patients often experience fear, anxiety, depression, and demoralization, which is associated not only with physical changes and pain, but also with impaired social interactions, loss of confidence in their own image, and uncertainty about their future [2].

In the early stages of treatment and rehabilitation therapy, a significant proportion of patients experience social isolation and reduced self-esteem, which exacerbates psychological stress [3]. Later, as anatomical integrity and lost functions are restored, the psycho-emotional state may partially stabilize, although many patients continue to have difficulty adapting to changes in appearance and reduced quality of life [4].

Psychological support is an important component of effective rehabilitation for such patients. Timely psychocorrection helps reduce anxiety and depression, improve adaptive abilities, increase motivation for treatment, and improve quality of life [5]. Support from family and friends plays an important role in the formation of patients’ psychoemotional stability [6,7].

Despite the achievements of psycho-oncology, the number of studies devoted to the psycho-emotional characteristics of the course of oncological diseases remains limited, especially with regard to the dynamics of psycho-emotional changes at different stages of the treatment and rehabilitation process and their connection with the localization of neoplasms and the degree of functional and aesthetic disorders [8,9]. In this context, this problem is relevant and requires further comprehensive research.

Therefore, **the aim** of this study was to analyze the dynamics of the psychoemotional state of patients with tumor diseases of the maxillofacial region at different stages of the treatment and rehabilitation process, as well as to establish its dependence on the localization of the tumor process, the severity of anatomical, functional, and aesthetic disorders, and their impact on the course of treatment and rehabilitation.

2. Materials and Methods

Study Design

The study was conducted between 2021 and 2024 in three regional cancer centers in western Ukraine (Chernivtsi, Ivano-Frankivsk, and Ternopil regions). A total of 85 patients of different sexes and ages with oncological pathology of the maxillofacial region were examined. A more detailed description of the sample is provided in Table 1.

Table 1. Characteristics of the clinical sample of patients (n=85).

Indication	Abs.	%
Tumor location		
Alveolar process	34	40,0
Nasal cavity and maxillary sinus	27	31,8
Hard and soft palate	24	28,2
Gender		
Men	52	61,2
Women	33	38,8
Average age	54,6 ± 11,8	–

Inclusion criteria: morphologically confirmed malignant process in the maxillofacial region, patients aged 30–75 years undergoing preoperative or postoperative treatment or radiation/chemoradiation therapy, no history of severe mental illness, provision of written informed consent. The study was conducted in accordance with the principles of the Helsinki Declaration.

Exclusion criteria: metastatic lesions of the central nervous system, severe cognitive impairment that makes it impossible to conduct interviews, a history of severe mental disorders.

The study was conducted in three stages of treatment:

- 1) upon admission (before treatment);
- 2) in the preoperative stage (1–2 days before surgery);
- 3) in the postoperative rehabilitation period (14–21 days after surgery).

All patients underwent a general clinical examination, assessment of the functional state of the head and neck organs (speech, chewing, swallowing, breathing), assessment of the degree of facial deformation and pain syndrome, analysis of dental and oncological history.

To analyze the psychoemotional state, an adapted clinical method of assessing psychoemotional reactions in patients with maxillofacial pathology was used, which takes into account the anatomical, functional, aesthetic, and social consequences of treatment [10].

The following were assessed:

- level of anxiety;
- depressive symptoms;
- affective lability;
- social maladjustment.

Taking into account the clinical and anatomical features, the severity of anatomical and functional disorders, three degrees of severity of the clinical condition of patients were identified:

1. Severe – damage to the nasal cavity and maxillary sinus (characterized by severe anatomical defects, breathing and speech disorders, significant facial asymmetry).
2. Moderate – damage to the upper jaw and alveolar process (facial deformation, chewing and articulation disorders, moderate functional disorders).
3. Mild – damage to the hard and soft palate (mainly functional speech and swallowing disorders without gross deformation of the facial skeleton).

Point assessment of the severity of psychoemotional disorders:

- mild – 0–4 points;
- moderate – 5–12 points;
- severe – 13–21 points.

The psychoemotional state was assessed by calculating the integral indicator of psychoemotional changes (IPEI), which took into account clinical and functional disorders of the upper respiratory tract.

The level of anxiety and depressive symptoms was assessed using the HADS (Hospital Anxiety and Depression Scale), which consists of 14 items with two subscales: HADS-A (anxiety) and HADS-D (depression) [11,12].

Assessment:

- 0–7 points – normal;
- 8–10 points – subclinical level;
- ≥11 points – clinically significant manifestations.

Statistical data processing was performed using STATISTICA 10.0 and SPSS 23.0 software. The following were used for data processing: descriptive statistics ($M \pm SD$, %, median [IQR]), Student's t-test, Mann-Whitney U test, Wilcoxon test, Friedman ANOVA, Pearson's correlation coefficient, calculation of 95% confidence intervals. Results were considered statistically significant at $p < 0.05$.

3. Results

The results of the HADS survey revealed a statistically significant increase in anxiety and depression scores depending on the stage of treatment.

An analysis of the dynamics of the psychoemotional state as a whole showed that the most pronounced psychoemotional disorders were found in patients at the stage of hospitalization. A high level of anxiety was noted in 72.9% of patients and depressive symptoms in 64.7%.

At the preoperative stage, there was a significant decrease in psychoemotional tension, which was expressed in a decrease in the frequency of high anxiety to 58.8% ($p<0.05$) and depression to 49.4% ($p<0.05$).

During the postoperative rehabilitation period, minimal psychoemotional disorders were detected: high anxiety levels were observed in only 32.9% of patients, and depression in 22.4% ($p < 0.01$).

The HADS scale was used to analyze anxiety and depression levels at different stages of treatment. Detailed mean values for anxiety, depression, and IPEI are shown in Table 2.

Table 2. Dynamics of indicators of the psychoemotional state of patients at different stages of treatment (n = 85).

Indicaton	Stage of admission	Preoperative stage	Postoperative (rehabilitation) stage
Anxiety level, points	12,4 ± 2,6	9,2 ± 2,1*	6,7 ± 1,9**
Depression level, points	10,8 ± 2,3	8,3 ± 2,0*	5,4 ± 1,6**
IPEI, u.o.	2,31 ± 0,09	1,87 ± 0,08*	1,28 ± 0,06**

Notes: * $p < 0.05$ compared to the admission stage, ** $p < 0.01$ compared to preoperative stage.

The results presented in Table 2 demonstrate a clear pattern: maximum psychoemotional disturbances at the stage of hospitalization → gradual decrease before surgery → minimal manifestations during rehabilitation.

After analyzing the dependence of the psychoemotional state on localization, it was found that the most pronounced disorders are observed in patients with lesions of the nasal cavity and maxillary sinus (IPEI = 2.61 ± 0.12 u.o.). Less pronounced disorders are found in patients with lesions of the alveolar process of the upper jaw (1.93 ± 0.09 u.o.), and the least pronounced – in patients with lesions of the hard and soft palate (1.42 ± 0.07 u.o.). The difference between the groups is statistically significant ($p < 0.01$) (Table 3).

Table 3. Psychoemotional indicators depending on the localization of the oncological process.

Localization of the lesion	IPEI, u.o.
Nasal cavity and maxillary sinus	2,61 ± 0,12
Upper jaw and alveolar process	1,93 ± 0,09
Hard and soft palate	1,42 ± 0,07

Thus, the results in Table 3 obtained indicate a tendency toward an increase in psychoemotional disorders with an increase in the anatomical complexity and functional significance of the affected area.

A statistically significant direct correlation was established between the severity of anatomical deformities and the level of psychoemotional disorders ($r = 0.62$; $p < 0.01$).

The highest IPEI values are characteristic of patients with severe injuries (2.61 ± 0.12 u.o.), represented by lesions of the nasal cavity and maxillary sinus. In cases of moderate severity (lesions of the alveolar process of the upper jaw), the IPEI was 1.93 ± 0.09 u.o., and in cases of mild severity (lesions of the hard and soft palate), it was 1.42 ± 0.07 u.o.

The difference between the groups is highly significant ($p<0.01$).

Additional analysis revealed that the most pronounced disorders were characteristic of patients with damage to structures associated with speech, facial expressions, and facial aesthetics. The presence of facial asymmetry, speech and chewing defects had a significant correlation with the level of anxiety ($r = 0.61$; $p < 0.01$).

The severity of psychoemotional disorders in each patient was determined by the dominant (most pronounced) clinical manifestation, which allowed the patient to be assigned to only one category (Table 4).

Table 4. Distribution of patients according to the dominant severity of psychoemotional disorders depending on the localization of the lesion (n = 85).

Severity	Localization	Number of patients (n)	Percentage %	IPEI, u.o.
Heavy	Nasal cavity, sinus	44	51,8	2,61 ± 0,12
Medium	Upper jaw, alveolar process	24	28,2	1,93 ± 0,09
Light	Hard and soft palate	17	20,0	1,42 ± 0,07

According to Table 4, patients with lesions of the nasal cavity and maxillary sinus predominantly had severe psychoemotional disorders (51.8%), patients with lesions of the upper jaw and alveolar process had moderate disorders (28.2%), and in cases of lesions of the hard and soft palate, mild disorders were more common (20.0%). These features reflect the dependence of the severity of psychoemotional disorders on the anatomical complexity and functional significance of the affected area.

The severity of the patients' clinical condition was determined based on the location of the tumor, the size of the lesion, and the severity of functional and anatomical disorders.

The analysis of the psychoemotional state depending on the nature of clinical manifestations of deformation showed that the highest IPEI values were observed in patients with facial asymmetry (2.58 ± 0.11 u.o.) and pronounced deformations of the facial skeleton (2.49 ± 0.10 u.o.), while in cases of predominantly functional disorders without pronounced deformities, this indicator was lower (1.87 ± 0.09 u.o.) (Table 5).

Table 5. Indicators of psychoemotional state depending on clinical manifestations of deformation.

Clinical manifestation	IPEI, u.o.
Facial asymmetry	2,58 ± 0,11
Deformation of the facial skeleton	2,49 ± 0,10
Predominantly functional disorders	1,87 ± 0,09

A comparative analysis of IPEI scores between groups of patients with different clinical manifestations of deformity (facial asymmetry, facial skeletal deformity, predominantly functional disorders) revealed statistically significant differences ($p < 0.05$).

The highest integral psychoemotional index scores were recorded in combination with: significant facial asymmetry, impaired nasal breathing, changes in voice formation, difficulty swallowing and articulation.

The data obtained allow us to conclude that psychogenic reactions also tend to vary depending on sex and gender characteristics. Accordingly, among individuals aged 25 to 36, severe distress was recorded in 42% of cases, whereas in the group of patients aged 50 to 60 and older, such reactions were observed in only 31.6%. Women accounted for the majority of all recorded psychoemotional reactions (80%), while men accounted for 20%, a difference that was particularly noticeable in the postoperative period.

4. Discussion

The results confirm that the psychoemotional state of patients with oncological lesions of the maxillofacial region is a dynamic multifactorial indicator that is formed under the influence of the stage of treatment, localization of the tumor process, and severity of the clinical condition.

During hospitalization, the highest manifestations of psychoemotional stress were recorded: high anxiety in 72.9% of patients, depressive symptoms in 64.7%, and severe psychoemotional disorders in 41.2%. The average values on the HADS scale (anxiety – 12.4 ± 0.6 points; depression – 10.8 ± 0.5 points) exceed the clinically significant threshold of 8 points, which corresponds to the level of severe psychoemotional stress. Similar results are described in studies by Kar et al. (2020) and in recent meta-analyses of psychoemotional disorders in patients with head and neck tumors [2,14,18].

In the preoperative stage, there was a significant decrease in anxiety scores to 10.6 ± 0.5 points and depression scores to 9.1 ± 0.4 points ($p < 0.05$), which is probably due to partial psychological adaptation to hospital conditions and the treatment process. In the postoperative rehabilitation period, anxiety (7.3 ± 0.4 points) and depression (6.2 ± 0.3 points) levels reached subclinical levels. Similar dynamics of reduction in psychoemotional stress after active treatment are described by other authors [8,9,17].

Thus, the identified pattern of “maximum → decrease → minimum” fully confirms modern ideas about the adaptive psychoemotional reactions of cancer patients.

An analysis of the relationship between the psychoemotional state and the location of the tumor process showed that the highest values of the integral psychoemotional index were recorded in cases of involvement of the nasal cavity and maxillary sinus (2.61 ± 0.12 points), slightly lower in cases of damage to the alveolar process of the upper jaw (1.93 ± 0.09 u.o.), and the lowest in cases of localization of the process in the hard and soft palate (1.42 ± 0.07 u.o.). This gradation reflects an increase in psycho-emotional stress depending on the degree of deformation and the functional and aesthetic significance of the affected anatomical structures. The obtained data confirm the findings of studies by Kushta (2022) and Matsuda et al. (2022), which demonstrated that facial deformity, speech impairment, and impaired nasal breathing are key psychotraumatic factors in patients with oncological pathology of the maxillofacial region [5,14].

Thus, our study allows us to establish a clinically justified sequence of localization depending on the degree of psychoemotional stress: nasal cavity/maxillary sinus → alveolar process → hard/soft palate, which reflects the actual hierarchy of psychoemotional maladjustment depending on the degree of anatomical and functional disorders and correlates with modern concepts of rehabilitation of cancer patients.

An analysis of the impact of clinical severity revealed a significant increase in psychoemotional stress as the severity of the condition increased: for mild IPEI, it was 1.42 ± 0.07 points, for moderate - 1.93 ± 0.09 points, and for severe - 2.61 ± 0.12 points ($p < 0.01$).

This fact confirms that the depth of psychoemotional changes is determined not only by the diagnosis itself, but primarily by the degree of anatomical defect and functional impairments. Similar patterns are described in the concept of “existential distress” by Chen et al. (2022), where the level of psychoemotional disorders increases with a decrease in the sense of bodily integrity and social identity [13].

Particular attention was paid to the relationship between the psychoemotional state and the clinical manifestations of deformity. The highest IPEI scores were recorded in patients with marked facial asymmetry (2.58 ± 0.11 standard deviations) and severe facial skeletal deformities (2.49 ± 0.10

standard deviations), whereas in cases of predominantly functional disorders without significant deformity, this index was 1.87 ± 0.09 standard deviations ($p < 0.05$). This underscores that it is precisely the aesthetic component and social stigmatization that play a leading role in the development of psychoemotional distress, as also noted in the works of Kar et al. and Marzorati et al. [2,7].

From a methodological standpoint, the use of the HADS scale in this study is justified, as it is widely used in global oncology psychology practice as a validated tool for screening anxiety and depression in somatic and oncology patients [11,12]. According to the original validated HADS criteria, scores ≥ 8 indicate a clinically significant level of anxiety/depression, and ≥ 11 indicate a high level of distress, allowing the scores obtained during hospitalization to be interpreted as manifestations of a severe psychoemotional disorder, which is confirmed by international data on patients with head and neck tumors [2,4,8].

Based on an analysis of age and gender differences, it was found that psychoemotional disorders were more pronounced in younger patients than in older patients, which is likely due to the greater importance of social activity, professional fulfillment, and physical appearance at a young age. Similar conclusions were reached in the works of Xiaodan et al. (2022) and Polański et al. (2022) [8,9].

At the same time, women had higher scores on the HADS scale for anxiety and depression than men. This correlates with the concept of gender-based vulnerability to psychoemotional stress in cancer patients, as described in contemporary psycho-oncological studies [4,7]. Somatized forms of psychoemotional disorders were more common in men, which is also consistent with data from contemporary psychological studies [9,13].

The results obtained expand the current understanding of psychoemotional changes in patients with oncological lesions of the maxillofacial region and demonstrate that the level of psychoemotional stress is shaped by three key factors: the stage of treatment, the location of the tumor, and the severity of anatomical and functional impairments, with additional modulating effects of the patient's age and gender.

Based on the data obtained, generalized conclusions were drawn regarding the clinical patterns of psychoemotional changes in patients with head and neck cancer.

5. Conclusions

In patients with cancer of the maxillofacial region, psychoemotional disorders exhibit distinct patterns at different stages of the disease. The most severe manifestations are recorded at the time of hospitalization (anxiety - 12.4 ± 0.6 points, depression - 10.8 ± 0.5 points, IPEI - 2.31 ± 0.09 points), with a significant decrease in the preoperative stage (IPEF - 1.87 ± 0.08 points, $p < 0.05$) and reaching minimum values in the postoperative rehabilitation period (IPEI - 1.28 ± 0.06 points, $p < 0.01$).

The severity of psychoemotional disorders largely depends on the localization of the tumor process. The highest scores were recorded in cases of involvement of the nasal cavity and maxillary sinus (2.61 ± 0.12 points), the average scores in cases of pathology of the upper jaw and alveolar process (1.93 ± 0.09 points), and the lowest in cases of hard and soft palate involvement (1.42 ± 0.07 points); the difference is statistically significant ($p < 0.01$).

A direct correlation was found between the degree of clinical severity of the lesion and the level of psychoemotional stress: in severe cases, the IPEI score was 2.61 ± 0.12 points, in moderate cases - 1.93 ± 0.09 points, and in mild cases - 1.42 ± 0.07 points ($p < 0.01$). The most pronounced psychoemotional disorders were found in patients with significant facial asymmetry and facial skeletal deformities.

Psychoemotional reactions depend on age, gender, as well as clinical and functional factors. The most severe distress is observed in women and younger patients, as well as in cases of significant facial asymmetry, speech impairments, and nasal breathing difficulties, which underscores the need for tailored psychoemotional support at all stages of cancer treatment.

Author Contributions: Conceptualization, O.B.B.; methodology, O.B.B., O.I.R. and N.I.B.; formal analysis, O.B.B. and M.A.B.; investigation, O.B.B., O.I.R., N.I.B., L.O.B. and M.A.B.; writing - original draft preparation, O.B.B.;

writing - review and editing, O.I.R., N.I.B., L.O.B. and M.A.B.; supervision, O.B.B.; project administration, O.B.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Ethical review and approval were waived for this study because it was a prospective clinical observational study based on primary medical records and examinations of patients with oncological diseases of the maxillofacial region. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki, EU Directive 86/609, and Order No. 690 of the Ministry of Health of Ukraine dated 23 September 2009.

Informed Consent Statement: Informed voluntary consent was obtained from all subjects involved in the study after they had been informed about its purpose, methodology, potential risks, and expected benefits.

Data Availability Statement: The authors confirm the use of their own clinical data, including summarized patient indicators, laboratory results, and study protocols. All materials are stored in the research group's archive and are available from the corresponding author upon reasonable request, subject to ethical and confidentiality restrictions.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

IPEI Integral indicator of psychoemotional changes
HADS Hospital Anxiety and Depression Scale

References

1. Pilz MJ, Gamper EM, Efficace F, Arraras JL, Nolte S, Liegl G, et al. EORTC QLQ-C30 general population normative data for Italy by sex, age and health condition: an analysis of 1,036 individuals. *BMC Public Health*. **2022**; volume 22(1); 1040. DOI: <https://doi.org/10.1186/s12889-022-13211-y>
2. Kar A, Asheem MR, Bhaumik U, Rao VUS. Psychological issues in head and neck cancer survivors: need for addressal in rehabilitation. *Oral Oncology*. **2020**; volume 110; 104859. DOI : <https://doi.org/10.1016/j.oraloncology.2020.104859>
3. Zub V, Manzhali E. Assessment of quality of life in patients with gastric cancer in Ukraine. *Wiadomosci Lekarskie*. **2023**; volume 76(5); pp. 956–963. DOI: <https://doi.org/10.36740/WLek202305111>
4. Zhang S, Li J, Hu X. Peer support interventions on quality of life, depression, anxiety, and self-efficacy among patients with cancer: a systematic review and meta-analysis. *Patient Education and Counseling*. **2022**; volume 105(11); pp. 3213–3224. DOI: <https://doi.org/10.1016/j.pec.2022.07.008>
5. Kushta AO. Psychoemotional state of patients with oral cavity and oropharyngeal cancer. *Visnyk of Vinnytsia National Medical University*. **2022**; volume 26(3); pp. 486–490. DOI: [https://doi.org/10.31393/reports-vnmedical-2022-26\(3\)-24](https://doi.org/10.31393/reports-vnmedical-2022-26(3)-24)
6. Chen X, Zhong L, Wang J, Dai T, Li M, Luo J, et al. Multimodal rehabilitation to improve quality of life and fatigue after radiotherapy in esophageal cancer patients: a randomized trial. *The Oncologist*. **2025**; volume 30(6); oyaf073. DOI: <https://doi.org/10.1093/oncolo/oyaf073>
7. Marzorati C, Voskanyan V, Sala D, Grasso R, Borgogni F, Pietrobon R, et al. Psychosocial factors associated with quality of life in cancer patients undergoing treatment: an umbrella review. *Health and Quality of Life Outcomes*. **2025**; volume 23; 31. DOI: <https://doi.org/10.1186/s12955-025-02357-z>
8. Xiaodan L, Guiru X, Guojuan C, Huimin X. Self-perceived burden predicts lower quality of life in advanced cancer patients: the mediating role of existential distress and anxiety. *BMC Geriatrics*. **2022**; volume 22(1); 803. DOI: <https://doi.org/10.1186/s12877-022-03494-6>
9. Polański J, Misiąg W, Chabowski M. Impact of loneliness on functioning in lung cancer patients. *International Journal of Environmental Research and Public Health*. **2022**; volume 19(23); 15793. DOI: <https://doi.org/10.3390/ijerph192315793>

10. Belikov OB, Roshchuk OI, Belikova NI, Belikova LO, Bernik MA. Assessment of the psychoemotional state of patients with oncological diseases of the maxillofacial region at different stages of treatment and rehabilitation. *Kharkiv Dental Journal*. **2025**; volume 4(6); pp. 618–631. DOI : <https://doi.org/10.26565/3083-5607-2025-6-08>
11. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*. **1983**; volume 67(6); pp. 361–370. DOI : <https://doi.org/10.1111/j.1600-0447.1983.tb09716.x>
12. Tsaralunga VM, Kalashnikov MA, Sydorova NM. Assessment of depression and anxiety in patients before diagnostic sigmoidoscopy and colonoscopy: the role of stress in the development of intestinal pathology. *Ukrainian Journal of Military Medicine*. **2023**; volume 4(4); pp. 87–94. DOI: [https://doi.org/10.46847/ujmm.2023.4\(4\)-087](https://doi.org/10.46847/ujmm.2023.4(4)-087)
13. Chen W, Chen Y, Xiao H. Existential distress in cancer patients: a concept analysis. *Cancer Nursing*. **2022**; volume 45(2); pp. 471–486. DOI : <https://doi.org/10.1097/NCC.0000000000000925>
14. Matsuda Y, Jayasinghe RD, Zhong H, Arakawa S, Kanno T. Oral health management and rehabilitation for patients with oral cancer: a narrative review. *Healthcare (Basel)*. **2022**; volume 10(5); 960. DOI: <https://doi.org/10.3390/healthcare10050960>
15. Tatiianchykov AO, Tsilmak OM, Yakovenko VYu. Psychological characteristics of patients' experience of oncological disease. *Habitus*. **2024**; volume 58; pp. 286–290. DOI : <https://doi.org/10.32782/2663-5208.2024.58.47>
16. Ramathuba DU, Ramutumbu NJ. Psychosocial distress and the quality of life of cancer patients in rural hospitals in Limpopo Province: a qualitative study. *Current Oncology*. **2025**; volume 32(1); 43. DOI : <https://doi.org/10.3390/curroncol32010043>
17. Hemming L, Duijts SFA, Zomerdijk N, Cockburn C, Yuen E, Hardman R, et al. A systematic review of peer support interventions to improve psychosocial functioning among cancer survivors: can findings be translated to survivors with a rare cancer living rurally? *Orphanet Journal of Rare Diseases*. **2024**; volume 19; 473. DOI: <https://doi.org/10.1186/s13023-024-03477-3>
18. Bognár SA, Teutsch B, Bunduc S, Veres DS, Szabó B, Fogarasi B, et al. Psychological intervention improves quality of life in patients with early-stage cancer: a systematic review and meta-analysis of randomized clinical trials. *Scientific Reports*. **2024**; volume 14; 13233. DOI : <https://doi.org/10.1038/s41598-024-63431-y>

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.