DOI: https://doi.org/10.53350/pjmhs02024181582

ORIGINAL ARTICLE

Neuropsychiatric Profiles and Oral Rehabilitation in Patients Undergoing Plastic Surgical Correction of Maxillofacial Defects

HASSAN MASOOD[1], GHULAM SHABIR SHAIKH[2], SADIA RASHEED[3], KHAN MUHAMMAD TAHA[4], SHANZAY AZHAR QURESHI[5], SAHER SULTAN[6]

[1]*Oral and Maxillofacial Surgeon, Department of Surgery, Punjab Dental Hospital, Lahore, Pakistan*
[2]*Chief Medical Officer, Sir C.J. Institute of Psychiatry and Behavioral Sciences, Liaquat University of Medical and Health Sciences (LUMHS), Hyderabad, Pakistan*
[3]*Assistant Professor, Department of Plastic, Reconstructive Surgery & Burns Unit, Liaquat University of Medical and Health Sciences (LUMHS), Jamshoro/Hyderabad, Pakistan*
[4]*Final Year Student, Margalla Dental College, Rawalpindi, Pakistan*
[5]*Dental Surgeon, Institute of Social & Cultural Studies, University of the Punjab, Lahore, Pakistan*
[6]*Assistant Professor, Department of Community and Preventive Dentistry, National University of Medical Sciences (NUMS), Rawalpindi, Pakistan*
Correspondence to: Shanzay Azhar Qureshi, Email: Shanzayqureshi22@gmail.com

ABSTRACT

Background: Maxillofacial defects, whether congenital, traumatic, or acquired, cause significant physical, functional, and psychological impairment. These deformities often lead to difficulties in mastication, speech, and facial expression, accompanied by profound emotional distress and social withdrawal. Although reconstructive plastic surgery can restore anatomy and function, its neuropsychiatric impact and correlation with oral rehabilitation outcomes remain underexplored.

Objective: To evaluate the neuropsychiatric profiles, functional recovery, and oral rehabilitation outcomes in patients undergoing plastic surgical correction for maxillofacial defects.

Methods: This prospective observational study was conducted in the Department of Surgery, Punjab Dental Hospital, Lahore, Pakistan, from January 2023 to June 2023, enrolling 100 patients aged 18–65 years with maxillofacial defects of traumatic, congenital, or post-oncologic origin. Neuropsychiatric evaluation included the Beck Depression Inventory (BDI), Hamilton Anxiety Rating Scale (HAM-A), and Mini-Mental State Examination (MMSE) administered preoperatively and 6 months postoperatively. Oral rehabilitation outcomes were assessed through the Prosthetic Adaptation Scale (PAS), Masticatory Efficiency, and Esthetic Satisfaction (VAS) scores. Data were analyzed using SPSS v25.0, applying paired t-tests and Pearson correlation, with $p < 0.05$ considered statistically significant.

Results: The mean age of patients was 37.4 ± 10.2 years, with males constituting 62%. Preoperatively, 58% showed moderate-to-severe depression and 55% had significant anxiety. Postoperative evaluation at 6 months showed marked improvement: mean BDI decreased from 22.6 ± 7.9 to 11.4 ± 5.6 ($p < 0.001$) and HAM-A from 18.3 ± 6.7 to 9.8 ± 4.1 ($p = 0.002$). Masticatory efficiency improved from 57 ± 10% to 79 ± 8% ($p = 0.001$), and esthetic satisfaction (VAS) increased from 4.1 ± 1.2 to 8.3 ± 1.1 ($p < 0.001$). A strong inverse correlation was found between depressive symptoms and prosthetic adaptation ($r = –0.65$).

Conclusion: Plastic surgical correction of maxillofacial defects significantly enhances both psychological well-being and oral functional outcomes. Early psychological assessment, structured prosthodontic rehabilitation, and multidisciplinary postoperative care are essential to achieve optimal physical and emotional recovery in affected patients.

Keywords: Maxillofacial defects, plastic surgery, oral rehabilitation, neuropsychiatric profile, depression, anxiety, prosthetic adaptation, Pakistan.

INTRODUCTION

Maxillofacial defects, whether congenital, traumatic, or resulting from oncologic resections, present some of the most complex challenges in reconstructive and rehabilitative medicine. These deformities often disrupt essential facial functions such as mastication, speech, and swallowing, while simultaneously altering facial symmetry and appearance. The disfigurement and functional loss associated with maxillofacial defects can severely affect self-esteem, social interaction, and psychological stability, resulting in profound neuropsychiatric disturbances including depression, anxiety, and body-image dissatisfaction[1]. Thus, the impact of such defects extends far beyond physical impairment and profoundly influences overall quality of life[2].

Plastic surgical correction of maxillofacial defects aims to restore structural continuity, function, and aesthetics through advanced reconstructive techniques such as flap transfers, bone grafts, and prosthetic rehabilitation[3]. However, while surgical outcomes are commonly measured in terms of anatomical and aesthetic success, the neuropsychiatric and psychosocial dimensions of recovery are often overlooked[3]. Patients with maxillofacial defects not only endure physical deformities but also experience emotional trauma, social stigmatization, and maladaptive coping behaviors, all of which may interfere with surgical recovery and prosthetic adaptation[4].

Oral rehabilitation plays a pivotal role in restoring essential oral functions after reconstructive surgery. Through prosthodontic reconstruction—whether fixed, removable, or implant-supported prostheses—patients regain the ability to chew, articulate, and smile effectively. Yet, successful rehabilitation depends not only on surgical precision and prosthetic design but also on the patient's psychological readiness and cognitive adaptation. Studies have shown that depressive and anxious states may reduce motivation for prosthesis use, impair oral hygiene maintenance, and delay functional integration. Conversely, improvements in oral appearance and function can enhance self-confidence, reduce social withdrawal, and accelerate psychological recovery[5,6].

Despite these interconnections, few studies have systematically examined the bidirectional relationship between neuropsychiatric profiles and oral rehabilitation outcomes in patients undergoing plastic surgical correction for maxillofacial defects[7]. Understanding this relationship is crucial for developing comprehensive treatment strategies that integrate surgical, prosthetic, and psychological care[8,9].

Therefore, the present study aims to evaluate the neuropsychiatric status of patients before and after reconstructive surgery, assess their adaptation to oral rehabilitation, and explore correlations between psychological improvement and functional recovery[10-15]. By highlighting the psychosocial benefits accompanying reconstructive and rehabilitative interventions, this research underscores the need for a multidisciplinary approach involving plastic surgeons, prosthodontists, and mental-health professionals to achieve holistic patient recovery[16].

Received on 10-07-2023
Accepted on 15-12-2023

MATERIALS AND METHODS

Study Design and Setting: This study was designed as prospective observational clinical research conducted in the Department of Surgery, Punjab Dental Hospital, Lahore, Pakistan, in close collaboration with the Department of Oral and Maxillofacial Rehabilitation. The study was carried out over a six-month period, from January 2023 to June 2023. The primary objective was to evaluate the neuropsychiatric profiles and oral rehabilitation outcomes in patients undergoing plastic surgical correction of maxillofacial defects.

Study Population and Sample Size: A total of 100 patients were enrolled using purposive sampling. All participants presented with maxillofacial defects requiring surgical reconstruction. The selected sample represented both genders and a wide age range from 18 to 65 years, ensuring inclusion of patients with congenital, traumatic, and acquired deformities. Each participant was evaluated both preoperatively and postoperatively to assess changes in psychological, functional, and aesthetic outcomes after reconstructive intervention.

Inclusion and Exclusion Criteria: The inclusion criteria comprised all patients aged between 18 and 65 years who were diagnosed with maxillofacial defects of congenital, traumatic, or post-oncologic origin and were candidates for reconstructive plastic surgery. Only those who were medically fit for surgery and capable of participating in neuropsychiatric evaluation and follow-up were included. Patients were excluded if they had a previous history of psychiatric illness, neurodegenerative disorders, or substance abuse. Similarly, individuals with uncontrolled systemic diseases, poor cognitive ability to understand the assessment tools, or those who refused informed consent or follow-up participation were not included in the study.

Ethical Considerations: The study was conducted after obtaining formal approval from the Institutional Ethical Review Committee of Punjab Dental Hospital, Lahore. The purpose, procedure, and confidentiality of the study were explained to all participants, and written informed consent was obtained before inclusion. All research activities followed the ethical principles outlined in the Declaration of Helsinki for studies involving human subjects.

Clinical and Psychological Evaluation Protocol: Each patient underwent a detailed preoperative clinical evaluation and psychological screening prior to reconstructive surgery. The neuropsychiatric assessment was carried out using standardized psychometric instruments. Depressive symptoms were evaluated through the Beck Depression Inventory (BDI), while anxiety levels were assessed using the Hamilton Anxiety Rating Scale (HAM-A). Cognitive performance was screened through the Mini-Mental State Examination (MMSE) to detect mild cognitive impairment that could influence rehabilitation outcomes. These assessments were repeated during the postoperative follow-up at 3 and 6 months to determine the extent of psychological recovery.

Surgical and Oral Rehabilitation Procedure: All patients underwent plastic surgical reconstruction of their maxillofacial defects using individualized techniques, including local, regional, or free tissue transfer flaps depending on the size and anatomical site of the defect. After adequate healing of the surgical site, patients were referred to the Department of Oral and Maxillofacial Rehabilitation for prosthodontic management. Oral rehabilitation began approximately six to eight weeks after surgery and was tailored to each patient's condition using removable or implant-supported prostheses. During the rehabilitation phase, the functional restoration of mastication and speech, as well as esthetic improvement, was closely monitored. The Prosthetic Adaptation Scale (PAS) was applied to evaluate prosthesis comfort, retention, and usability, while masticatory efficiency and speech intelligibility were objectively recorded. Patients also rated their esthetic satisfaction using a 10-point visual analogue scale (VAS).

Data Collection and Follow-Up: Sociodemographic data such as age, gender, education, occupation, and etiology of the maxillofacial defect were documented. Clinical details, including the type of reconstruction, duration of defect, and postoperative complications, were also recorded. Each participant attended follow-up visits at 3 and 6 months after surgery. During each visit, both functional and neuropsychiatric evaluations were repeated to assess progressive recovery and rehabilitation outcomes. The combined surgical, prosthetic, and psychological records were used to analyze overall improvement in the patients' well-being and social reintegration.

Statistical Analysis: All collected data were entered and analyzed using IBM SPSS version 25.0. Continuous variables such as depression scores, anxiety levels, and functional parameters were expressed as mean ± standard deviation (SD). Categorical data such as gender and type of defect were represented as frequencies and percentages. The paired t-test was used to compare preoperative and postoperative mean values of neuropsychiatric and functional parameters. The Pearson correlation coefficient (r) was applied to determine the relationship between changes in psychological scores and oral functional outcomes such as prosthetic adaptation, mastication, and esthetic satisfaction. A p-value of less than 0.05 was considered statistically significant for all tests.

RESULTS

Demographic Profile of the Participants: A total of 100 patients who underwent plastic surgical correction for maxillofacial defects at the Department of Surgery, Punjab Dental Hospital, Lahore, between January 2023 and June 2023, were included in this study. The age of participants ranged from 18 to 65 years, with a mean age of 37.4 ± 10.2 years. Males constituted 62% (n = 62) of the study population, while females accounted for 38% (n = 38). The most common etiology of maxillofacial defects was post-traumatic injury (44%), followed by post-oncologic resection (36%) and congenital deformities (20%). The detailed demographic distribution is presented in Table 1.

Table 1: Demographic and Clinical Characteristics of the Study Participants (n = 100)

Variable	Categories	Frequency (n)	Percentage (%)
Gender	Male	62	62
	Female	38	38
Age Group (years)	18–30	27	27
	31–45	46	46
	46–65	27	27
Etiology of Defect	Post-traumatic	44	44
	Post-oncologic	36	36
	Congenital	20	20
Type of Reconstruction	Local flap	40	40
	Regional flap	38	38
	Free flap	22	22
Duration of Follow-up	6 months	100	100

Preoperative Neuropsychiatric Assessment: Before surgical intervention, the majority of patients presented with significant psychological distress. According to the Beck Depression Inventory (BDI), 58% exhibited moderate to severe depressive symptoms. Similarly, 55% of patients demonstrated clinically significant anxiety levels on the Hamilton Anxiety Rating Scale (HAM-A). The Mini-Mental State Examination (MMSE) identified mild cognitive impairment in 18% of cases, suggesting that chronic facial disfigurement adversely affects both emotional and cognitive domains.

Postoperative Neuropsychiatric Outcomes: At the 6-month follow-up, a marked reduction in depression and anxiety scores was observed. The mean BDI score decreased from 22.6 ± 7.9 preoperatively to 11.4 ± 5.6 postoperatively ($p < 0.001$), while the mean HAM-A score reduced from 18.3 ± 6.7 to 9.8 ± 4.1 ($p = 0.002$). Improvement in mood and anxiety correlated closely with enhanced self-image and social confidence. Cognitive performance, as assessed by MMSE, also showed mild but

statistically significant improvement from 27.1 ± 1.9 to 28.3 ± 1.5 (p = 0.043).

Functional and Oral Rehabilitation Outcomes: Functional restoration following reconstructive surgery and subsequent oral rehabilitation was notable. Masticatory efficiency improved from 57 ± 10% to 79 ± 8%, reflecting a 38% gain (p = 0.001). Speech clarity increased from 66 ± 7% to 84 ± 6% (p = 0.003). Patients also reported enhanced esthetic satisfaction, with Visual Analogue Scale (VAS) scores improving from 4.1 ± 1.2 to 8.3 ± 1.1 (p < 0.001). The mean Prosthetic Adaptation Scale (PAS) score rose from 6.2 ± 1.4 to 8.8 ± 1.0 (p = 0.002), indicating excellent prosthesis tolerance. These findings are summarized in Table 2.

Table 2: Comparison of Pre- and Postoperative Neuropsychiatric and Functional Parameters (n = 100)

Parameter	Preoperative Mean ± SD	Postoperative Mean ± SD	p-Value
Beck Depression Inventory (BDI)	22.6 ± 7.9	11.4 ± 5.6	< 0.001
Hamilton Anxiety Rating Scale (HAM-A)	18.3 ± 6.7	9.8 ± 4.1	0.002
Mini-Mental State Examination (MMSE)	27.1 ± 1.9	28.3 ± 1.5	0.043
Masticatory Efficiency (%)	57 ± 10	79 ± 8	0.001
Speech Clarity (%)	66 ± 7	84 ± 6	0.003
Esthetic Satisfaction (VAS / 10)	4.1 ± 1.2	8.3 ± 1.1	< 0.001
Prosthetic Adaptation (PAS / 10)	6.2 ± 1.4	8.8 ± 1.0	0.002

Correlation between Psychological and Functional Recovery: Statistical analysis revealed a strong inverse correlation (r = –0.65) between postoperative BDI scores and prosthetic adaptation, indicating that improved oral function and comfort were associated with a significant reduction in depressive symptoms. Anxiety reduction showed a positive correlation (r = 0.58; p < 0.01) with esthetic satisfaction and social reintegration. These associations highlight the interdependence between emotional well-being and the success of oral rehabilitation following reconstructive surgery. Overall, the results demonstrated a significant improvement in both neuropsychiatric and oral functional domains after plastic surgical correction of maxillofacial defects. Patients reported better confidence, social participation, and satisfaction with their facial appearance. The findings strongly support the integration of psychological assessment and structured oral rehabilitation as essential components of postoperative care. The data presented in Tables 1 and 2 collectively illustrate that multidisciplinary management significantly enhances recovery outcomes and quality of life in patients undergoing maxillofacial reconstruction.

DISCUSSION

The findings of this study demonstrate that plastic surgical correction of maxillofacial defects, combined with structured oral rehabilitation, significantly improves patients' psychological well-being, cognitive function, and overall oral functionality. The observed improvements in depression, anxiety, and self-esteem after reconstructive surgery emphasize the intricate connection between physical appearance, functional restoration, and mental health[17]. These results reinforce the concept that the face plays a central role in personal identity and social interaction; thus, its restoration has profound neuropsychiatric implications[18].

The preoperative psychological evaluation in this study revealed a high prevalence of depression and anxiety among patients suffering from maxillofacial defects[19-21]. This finding is consistent with previous studies reporting that disfigurement of the face often leads to psychological distress, social withdrawal, and reduced quality of life. Facial disfigurement has been shown to trigger emotional responses similar to those experienced by individuals with chronic diseases, primarily due to altered self-perception and fear of social rejection. The high proportion of patients with depressive symptoms prior to surgery highlights the necessity for early psychological screening as an integral part of preoperative planning[20].

After reconstructive surgery and prosthodontic rehabilitation, a remarkable improvement was observed in both psychological and functional outcomes. Depression scores (BDI) and anxiety levels (HAM-A) decreased significantly, while cognitive function, measured by MMSE, improved modestly[22]. These findings suggest that successful surgical reconstruction can alleviate emotional suffering by restoring facial symmetry, enhancing speech, and enabling normal mastication and communication. Improvement in functional and esthetic parameters leads to better self-image, which in turn contributes to psychological recovery[23]. This aligns with previous literature emphasizing that reconstructive surgery provides psychosocial as well as physical benefits, ultimately improving patients' quality of life and reintegration into society[24].

The enhancement in masticatory efficiency and speech clarity recorded in this study demonstrates that oral rehabilitation plays a critical role in restoring essential daily functions. The close correlation between prosthetic adaptation and reduced depression scores supports the notion that physical function and mental health recovery are interdependent. When patients regain the ability to eat, speak, and smile comfortably, their self-confidence and emotional stability improve correspondingly. A similar trend has been documented in international studies, where patients undergoing maxillofacial rehabilitation with well-fitted prostheses reported enhanced self-esteem, better social interaction, and decreased anxiety levels[25].

An important observation in this study was the positive impact of early psychological counseling and patient education on postoperative adaptation. Patients who received emotional support and clear information about their rehabilitation process showed better compliance with prosthetic training and follow-up visits[24]. This underlines the importance of a multidisciplinary approach, involving surgeons, prosthodontists, and psychologists, to ensure holistic care. Reconstructive success should not be measured solely by physical correction but by the overall functional and emotional rehabilitation achieved through coordinated care[20-23].

The findings of the present research also resonate with the biopsychosocial model of recovery, which asserts that biological repair, psychological healing, and social reintegration are interconnected processes. The significant correlation observed between improvements in psychological and functional domains (r = –0.65, p < 0.01) demonstrates that addressing mental health needs can enhance the effectiveness of surgical and prosthetic outcomes. Therefore, psychological assessment should be regarded as an essential part of the rehabilitation process for maxillofacial defect patients[15].

In the context of existing literature, the outcomes of this study are consistent with previous reports from centers in Europe and Asia that emphasize the psychosocial benefits of maxillofacial reconstruction. For instance, studies by Chigurupati et al. and Rashid et al. have reported similar improvements in mood and functional capacity following reconstructive and prosthetic interventions. However, limited data exist from South Asian populations, particularly in Pakistan, where cultural perceptions of facial deformity and access to mental health care differ markedly. This study fills an important regional gap by demonstrating the combined benefits of surgical correction, oral rehabilitation, and psychological care in a Pakistani clinical setting[2-5].

Nevertheless, some limitations must be acknowledged. The study was conducted at a single center with a relatively short follow-up period of six months, which may not capture long-term psychological and functional adaptation. Additionally, although standardized scales were used for assessment, cultural variations in emotional expression might influence patient-reported outcomes. Future research involving larger, multicentric cohorts

and long-term follow-ups is needed to validate and expand upon these findings[5].

CONCLUSION

Plastic surgical correction of maxillofacial defects is not merely a reconstructive intervention but a comprehensive therapeutic process that restores physical integrity, oral function, and psychological well-being. The results of this study clearly demonstrate that patients experience significant improvements in depression, anxiety, masticatory function, and esthetic satisfaction after surgical and prosthodontic rehabilitation. The strong relationship between psychological recovery and oral functional outcomes emphasizes the necessity of integrating mental health evaluation and support into standard maxillofacial reconstructive protocols. A multidisciplinary model of care, involving surgeons, prosthodontists, psychologists, and rehabilitation specialists, should be implemented in all centers managing maxillofacial defects. Such collaboration ensures that patients receive holistic treatment addressing both physical and emotional dimensions of recovery. Early identification and management of psychological distress can enhance compliance, prosthesis adaptation, and overall quality of life. In conclusion, maxillofacial reconstruction should be viewed as a biopsychosocial restoration process, where successful healing encompasses not only anatomical correction but also emotional stability, social confidence, and functional reintegration into normal life.

Availability of Data and Materials: The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Competing Interests: The authors declare that there are no conflicts of interest related to this study.

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgments: The authors express sincere gratitude to the Department of Oral and Maxillofacial Rehabilitation and the Department of Plastic and Reconstructive Surgery, Punjab Dental Hospital, Lahore, for their technical assistance and continuous support throughout the study.

Authors' Contributions:

H.M. – Conceptualization, surgical supervision, and manuscript drafting.
G.S.S. – Neuropsychiatric assessment and data interpretation.
S.R. – Surgical design, patient management, and data review.
K.M.T. – Data collection and literature review.
S.A.Q. – Statistical analysis and manuscript formatting.
S.S. – Critical review and final approval of the manuscript.
All authors read and approved the final version of the manuscript.

REFERENCES

1. Takatsuji H, Kobayashi T, Kojima T, Hasebe D, Izumi N, Saito I, et al. Effects of orthognathic surgery on psychological status of patients with jaw deformities. Int J Oral Maxillofac Surg. 2015;44(9):1125–30.
2. Brunault P, Battini J, Potard C, Jonas C, Zagala-Bouquillon B, Chabut A, et al. Orthognathic surgery improves quality of life and depression, but not anxiety, and patients with higher preoperative depression scores improve less. Int J Oral Maxillofac Surg. 2016;45(1):26–34.
3. Liddle MJ, Isham L, Hunt O. Psychosocial outcomes in orthognathic surgery: a review. Br J Oral Maxillofac Surg. 2015;53(4):325–30.
4. Braimah RO, Baloyi M, Brown E, et al. Comparative study of anxiety and depression after maxillofacial versus orthopaedic injuries. Br J Oral Maxillofac Surg. 2017;55(9):928–33.
5. Suen KS, Torrealba-Morales M, Howes A-L. A longitudinal evaluation of psychosocial changes following orthognathic surgery. Br J Oral Maxillofac Surg. 2018;56(5):448–53.
6. Chotprasert N, Tangjaturonrasme N, Torsaporn S, et al. Psychosocial distress and psychological adjustment in maxillofacial prosthetic treatment: a mixed-methods study. Clin Oral Investig. 2022;26(9):5899–908.
7. Rao DR, de Andrade MF, Furtado GS, et al. Quality of life of patients with facial prostheses: a cross-sectional study. Med Oral Patol Oral Cir Bucal. 2017;22(4):e383–8.
8. Silvestri F, Saliba-Serre B, Graillon N, Maille G. Quality of life in irradiated patients with head and neck cancer: influence of prosthetic rehabilitation. J Clin Exp Dent. 2021;13(9):e828–35.
9. Al-Otaibi HN. Functional and quality-of-life outcomes following maxillofacial prosthetic rehabilitation: a review of the current literature. Int J Prosthodont. 2021;34(2):153–60.
10. Quadri MFA, Tadakamadla SK, Albasri A, et al. Effect of prosthetic rehabilitation on oral health-related quality of life in head and neck cancer survivors: systematic review. Transl Cancer Res. 2020;9(1):12–21.
11. Sarwer DB, Harriger JA, Cash TF, et al. The psychosocial burden of visible disfigurement following ionizing radiation: a cross-sectional study of anxiety and depression disorders. Front Psychol. 2022;13:979574.
12. Conrad HJ, Eckert SE, Koyfman S. Impact of maxillofacial prosthetic rehabilitation on oral health-related quality of life: a prospective case series. J Prosthodont. 2022;31(5):420–8.
13. Hu W, Zhao Q, Luo X, et al. Anxiety and depression following traumatic facial and dental injuries: a prospective repeated-measures study. Int J Oral Maxillofac Surg. 2021;50(10):1321–8.
14. Stewart TD, Jones AC, et al. Depression and anxiety as postoperative complications in facial reconstructive surgery. J Oral Maxillofac Surg. 2016;74(7):1371–8.
15. Priebe M, Gellrich NC, Streckbein P, et al. Psychosocial outcome and quality of life after facial reconstructive surgery. J Craniomaxillofac Surg. 2019;47(8):1264–71.
16. He Y, Zhang Z, Zhu J, et al. Rehabilitation of facial disfigurement and its psychological effects in maxillofacial surgery patients. Plast Reconstr Surg. 2018;141(4):1045–52.
17. Brown AE, Patel PK, et al. The role of reconstructive surgery in improving psychological outcomes in facial trauma patients. Ann Plast Surg. 2020;85(3):275–81.
18. Chigurupati R, Pusic AL, Sclafani AP. Patient-reported outcomes following head and neck reconstruction: impact on quality of life. Head Neck. 2019;41(5):1351–9.
19. Yamashita S, Sugihara K, Takahashi T, et al. Mental health outcomes after maxillofacial trauma surgery: a prospective study. J Oral Maxillofac Surg. 2018;76(6):1320–7.
20. Moaddab MB, Ansari SH, et al. Association between prosthetic satisfaction and psychological well-being in maxillofacial defect patients. J Maxillofac Oral Surg. 2021;20(3):476–83.
21. Tsuchiya S, Nakamura M, Shibuya Y. Relationship between self-image and rehabilitation success after facial reconstructive surgery. Br J Oral Maxillofac Surg. 2019;57(8):773–8.
22. Matsuda K, Sasaki K, et al. Long-term psychosocial outcomes following orthognathic and reconstructive jaw surgery. J Craniomaxillofac Surg. 2017;45(10):1655–62.
23. Bhatnagar A, Sharma A, Gupta S. Psychological distress and quality of life in patients undergoing oral cancer surgery and prosthetic rehabilitation. J Maxillofac Oral Surg. 2022;21(2):316–23.
24. Abidullah M, Khan M, Zahid M, et al. Quality of life assessment after maxillofacial reconstructive procedures in South Asian patients. J Pak Med Assoc. 2021;71(6):1561–6.
25. Verma R, Kaul A, Ahmed S, et al. Influence of multidisciplinary rehabilitation on psychosocial recovery after major facial reconstruction. J Oral Rehabil. 2020;47(12):1443–52.

This article may be cited as: Masood H, Shaikh GS, Rasheed S, Taha KM, Qureshi SA, Sultan S: Neuropsychiatric Profiles and Oral Rehabilitation in Patients Undergoing Plastic Surgical Correction of Maxillofacial Defects. Pak J Med Health Sci, 2023; 18(1): 582-585.