

**ASSESSING THE INFLUENCE OF ORTHOGNATHIC SURGERY ON QUALITY OF LIFE IN NORTH INDIAN POPULATION****Dr. Dayashankara Rao JK¹, Dr Sanjeev Kumar² & Dr Varun Arya³**¹Ph D Scholar, Department of Oral and Maxillofacial Surgery, Faculty of Dental Sciences, SGT University, Gurugram, Haryana, INDIA²Professor and Head, Department of Oral and Maxillofacial Surgery, Faculty of Dental Sciences, SGT University, Gurugram, Haryana, INDIA³Professor, Department of Oral and Maxillofacial Surgery, Faculty of Dental Sciences, SGT University, Gurugram, Haryana, INDIA**Address of Correspondence:** Dr. Dayashankara Rao JK, Ph D Scholar, Department of Oral and Maxillofacial Surgery, Faculty of Dental Sciences, SGT University, Gurugram, Haryana, INDIA**ABSTRACT****Aim:** Assessing the influence of Orthognathic Surgery on Quality of Life.**Materials and Methods:** This research covered all individuals who were scheduled to have orthognathic surgery. The study comprised twenty-five patients who were planned to have bimaxillary orthognathic surgery after the completion of pre-surgical orthodontic therapy for oral decompensation. Three times, once before surgery (T0), and then again five weeks later (T1), they were assessed once more. All participants gave their written informed permission and the study's methodology was pre-approved by the research ethics committee before the investigation began. The data collection involved the use of self-administered questionnaires that included a generic health-related measure (SF-36), a generic oral health-related measure (OHIP-14) and a condition-specific quality of life measure (OQLQ).**Results:** As compared to the scores before orthognathic surgery, the SF-36 Physical ($P < 0.01$) and Mental ($P < 0.001$) health component scores were significantly lower 5 weeks following the procedure. six of the eight domains showed a significant decline in average scores ($P < 0.01$) (Table 2). Three months after orthognathic surgery, there were no discernible changes in the Physical and Mental SF-36 evaluations when compared to the pre-surgical values ($P > 0.05$). With a higher average score seen 3 months after the procedure ($P < 0.05$) (Table 2), the role emotional domain was the only one out of the eight categories to show a statistically significant change.The overall OHIP-14 score did not change significantly ($P > 0.05$) five weeks after orthognathic surgery. However, the average score for functional limitation significantly increased ($P < 0.05$), whereas the average scores for psychological discomfort and psychological impairment significantly decreased ($P < 0.05$). More than 50 % of patients showed signs of improvement. Table 3 contains the relevant data.**Conclusion:** QOL across several well-being-related indicators had clearly declined by the sixth week. The first 4 to 6 weeks patients felt less comfortable due to surgical edema, pain and healing. But there was significant improvement in function, psychological wellbeing and

esthetics at the end of 3 months post-surgery period. By contrasting the quality of life before and after the procedure, this enhancement became apparent. Hence the quality of life and patient satisfaction was better after surgery.

Keywords: Orthognathic Surgery, Quality of Life, SF-36, OHIP

Introduction

A more complete picture of a patient's physical and mental health, as well as their quality of life, may be achieved with the use of health status indicators, which have become more popular in the last 20 years [1]. The psychological effects of this phenomena merit the attention of experts in the area, since one's physical appearance significantly impacts other aspects of life. Beyond mortality and population growth rates, the study criteria now prioritize the patient's subjective well-being [2]. A number of health issues, some of which may not be fatal but still cause substantial harm to a person's bodily, social, and mental health, have recently attracted more attention. Because they are often associated with limitations in both appearance and functionality, dentofacial anomalies have far-reaching negative societal consequences. This could change drastically after orthodontic surgery [3]. For the treatment of moderate to severe dentofacial anomalies, a well-respected therapeutic method is the combination of orthodontic treatment with orthognathic surgery. Correcting the facial skeleton is the main objective of this surgery so that malocclusion orthodontic therapy may be administered. This lends credence to the increasing body of evidence pointing to quality-of-life evaluation as a key indicator of treatment efficacy. Orthognathic surgery and dental treatment have been shown to enhance quality of life in several studies [4,5]. Australian researchers Slade and Spencer¹³ developed the "Oral Health Impact Profile" (OHIP) in 1994. A condensed version, OHIP-14, was issued by Slade in 1997. Examining the impact of dental problems on one's physical, mental, and social aspects of everyday life is what the OHIP is all about. There has been development, testing, and acceptance, which all attest to its validity, accuracy, and dependability. The examination of people's health-related goals is made easier using this tool [6-8]. It skilfully captures the individual's opinion on the quality of life associated to oral disorders and is being utilized in many countries. Functional limitation, physical pain, discomfort, physical deficiency, physical incapacity, social incapacity, and deficit are the seven subcategories into which the categories are arranged. Researchers in other countries utilize the OHIP Until 2005, Latin American countries lacked a tool comparable to the OHIP, according to Oliveira and Nadanovsky[9,10].

Materials and Methods

This research covered all individuals who were scheduled to have orthognathic surgery. The patient's condition was assessed by American anesthesiologists according to their criteria. Only those classified as "healthy" (ASA 1) were include in the study. All the patients with ASA 2 and above, previous orthognathic surgery and any cleft deformities were excluded. The study comprised twenty-five patients who were planned to have bimaxillary orthognathic surgery after the completion of pre-surgical orthodontic therapy for oral decompensation. Three times, once before surgery (T0), and then again five weeks later (T1), and aftr 3 months period. All participants gave their written informed permission and the study's methodology was pre-approved by the research ethics committee before the investigation began.

Methodology

The data collection involved the use of self-administered questionnaires that included a generic health-related measure (Short Form Health Survey; SF-36) [11,12], a generic oral health-related measure (Short Form Oral Health Impact Profile; OHIP-14) [13,14], and a condition-specific quality of life measure (Orthognathic Quality of Life Questionnaire; OQLQ) [15,16]. One way to quantify the impact of one's mental and physical health on one's quality of life is the Short Form 36 (SF-36). Physical functioning, role-physical, bodily discomfort, general health, vitality, social functioning, role-emotional, and mental health are the eight domains of health that are investigated. The physical and mental component summary scores are computed using the scoring method. Scores may range from 0 (the worst possible health-related quality of life) to 100 (the best possible quality of life overall) [12,17]. In seven different areas, the OHIP-14 evaluates how a person's dental health impacts their QOL. Functional limitation, bodily pain, psychological discomfort, bodily disability, psychological disability, social impairment, and handicap are the eight categories that comprise the two-question checklist. A Likert-type scale is used to record the replies for each issue, and the following codes are allocated to them: There are four possible values: 0 for never, 1 for seldom, 2 for occasionally, 3 for very often, and 4 for very often. Oral health's influence on quality of life is quantified using the OHIP-14 ratings, which go from 0 (no effect) to 56 (very severe). By tallying up the responses to items inside a certain domain, one may ascertain the domain scores. Scores may range from 0 to 11, with higher numbers indicating a more substantial impact. The OQLQ is a tool for gauging how a person's quality of life is affected by dentofacial deformity. Scores might range from 1 (not at all bothersome) to 4 (very much so) on a 4-point scale. On the OQLQ, you may get a score anywhere from zero to eighty-eight. The quality of life is better when the number is lower and worse when the score is higher. Questions 1, 7, 10, 11, and 14 cover facial esthetics (scoring 0 to 20), oral function (scoring 2 to 6, 0 to 20), awareness of dentofacial esthetics (scoring 8, 9, 12, and 13 from 0 to 16), and social aspects of dentofacial deformity (scoring 15 to 22 from 0 to 32). The total number of questions is 22. Using questions using a 2-to-7-point scale, we were able to gauge worldwide patient satisfaction. The patients were asked to rate their current state compared to before the surgery and to indicate whether they would recommend the treatment to others.

Data Analysis

Total and domain scores for the SF-36, OHIP-14, and OQLQ assessments were computed using scoring algorithms at three time points: baseline (T0), five weeks (T1), and five months (T2). Since the data did not fit to a Poisson distribution, we calculated the means and standard deviations and used the Wilcoxon Signed Rank test to evaluate the differences in quality of life (QOL) ratings between T0-T1 and T0-T2. When comparing different patient groups, the Mann-Whitney U test was used. To measure the statistical difference in scores, effect sizes (ES) were computed. The standard deviation divided by the mean change in scores yields the effect size. The following categories apply to impact sizes: minimal (less than 0.2), small (0.2 to 0.49), moderate (0.5 to 0.8), and enormous (more than 0.8). An intervention's impact size (ES) is proportionate to the magnitude of its change. The analysis was carried out with the help of SPSS 25.0.

Results

All 25 individuals had bimaxillary surgery. A preoperative questionnaire was completed by each participant at the start of the trial (T0), and it was subsequently repeated five weeks (T1) and 3 months (T2) after the procedure. The demographic information of the patients is shown in Table 1.

Table 1. Basic profile of the participants

	Number of patients n=25	Percentage (%)	P value
Gender			0.12
Male	19	76	
Female	6	24	
Age (in years)			0.16
Below 20	2	8	
21-25 years	8	32	
26-30 years	5	20	
Above 30 years	10	40	
Education			0.14
Up to 10 th standard	2	8	
Up to 12 th standard	5	20	
Graduate	10	40	
Post-graduate	8	32	
Type of deformity			0.19
Class II	3	12	
Class III	12	48	
Asymmetry	7	28	
Others	3	12	

QOL (SF-36)

Baseline to 5 Weeks (T0-T1)

As compared to the scores before orthognathic surgery, the SF-36 Physical ($P < 0.01$) and Mental ($P < 0.001$) health component scores were significantly lower 5 weeks following the procedure. As per Table 2, six of the eight domains showed a significant decline in average scores ($P < 0.01$).

Baseline to 3 Months (T0-T2)

Three months after orthognathic surgery, there were no discernible changes in the Physical and Mental SF-36 evaluations when compared to the pre-surgical values ($P > 0.05$). With a higher average score seen 3 months after the procedure ($P < 0.05$) (Table 2), the role emotional domain was the only one out of the eight categories to show a statistically significant change.

OHIP-14

Baseline to 5 Weeks (T0-T1)

The overall OHIP-14 score did not change significantly ($P > 0.05$) five weeks after orthognathic surgery. However, the average score for functional limitation significantly increased ($P < 0.05$), whereas the average scores for psychological discomfort and psychological impairment significantly decreased ($P < 0.05$). Half or more of the patients showed signs of improvement. Table 3 contains the relevant data.

Baseline to 3 Months (T0-T2)

Three months after orthognathic surgery, the overall OHIP-14 score significantly decreased ($P < 0.001$). Additionally, significant decreases were seen in all seven OHIP-14 domains ($P < 0.05$). When compared to the prior 5-week period, an increasing number of patients reported an improvement. Table 3 displays the data.

OQLQ

Baseline to 5 Weeks (T0-T1)

At 5 weeks post-orthognathic surgery, there was no statistically significant decline in overall OQLQ score. Though 72% of patients reported an improvement, the face esthetics score dropped significantly after 5 weeks ($P = 0.001$) (Table 4).

Baseline to 3 Months (T0-T2)

The overall OQLQ score significantly decreased ($P < 0.001$) after 3 months after orthognathic surgery. Furthermore, the average ratings in three of the four categories: social, face esthetics, and oral function, decreased significantly ($P < 0.001$). There was a significant increase in the number of patients who reported a good change (Table 4). Following 5 weeks, 70% of patients said they were better off "in comparison to their pre-surgery condition." Not only that, but eighty percent of patients said they would "recommend the surgical procedure to other individuals." With percentages of 74% and 82% for the relevant variables at the 3-month mark. Table 2. Comparisons of SF-36 between baseline (T0) and postoperative 5 weeks (T1) and postoperative 3 months (T2)

SF-36	Scoring	Baseline T0		Postoperative 5 Weeks T1		P value	Postoperative 3 Months T2		P value
		Mean	SD	Mean	SD		Mean	SD	
Physical health score (PCS)	0-100	55.85	5.91	49.25	10.32	.005	55.87	6.94	0.11
Mental health score (MCS)*	0-100	48.63	9.65	39.84	14.68	<.002	51.84	6.89	0.12
Physical functioning	0-100	98.47	5.23	91.27	13.54	.003	97.74	4.82	0.15
Role physical	0-100	89.93	25.31	48.83	41.36	<.004	94.23	19.63	0.10
Bodily pain	0-100	82.56	19.53	72.38	22.86	.009	86.31	16.47	0.11
General health	0-100	67.20	17.91	69.41	12.67	.12	71.29	18.59	0.14
Vitality	0-100	63.41	18.20	55.58	17.13	.008	62.46	17.13	0.11
Social functioning	0-100	83.83	20.97	53.94	25.31	<.004	90.57	15.51	0.09
Role emotional	0-100	80.56	33.56	56.74	41.66	.003	92.83	15.94	0.06
Mental health	0-100	72.13	16.61	69.23	19.43	.15	72.21	14.82	0.02

Table 3 Comparisons of OHIP-14 between baseline (T0) and postoperative 5 weeks (T1) and postoperative 3 months (T2)

OHIP-14	Score	Baseline T0		Postoperative 5 Weeks T1		P Value	Postoperative 3 Months T2		P Value
		Mean	SD	Mean	SD		Mean	SD	
OHIP-14 score	0-56	21.25	9.96	23.37	13.52	.12	12.75	9.95	0.02

Functional limitation	0-8	3.58	1.56	4.18	1.56	.03	1.56	1.13	0.01
Physical pain	0-8	4.18	2.67	4.23	2.19	.15	2.00	0.98	0.01
Psychological discomfort	0-8	5.67	2.34	4.95	1.94	.01	2.78	1.84	0.01
Physical disability	0-8	4.09	1.96	5.20	2.31	.14	1.92	1.59	0.02
Psychological disability	0-8	4.78	1.83	5.14	1.51	.04	2.39	1.65	0.01
Social disability	0-8	2.29	2.58	3.39	1.93	.05	1.00	2.14	0.012
Handicap	0-8	3.81	2.47	3.74	1.70	.11	1.11	2.27	0.01

Table 4 - Comparisons of between baseline (T0) and postoperative 5 weeks (T1) and postoperative 3 months (T2)

OQLQ	Score	Baseline T0		Postoperative 5 Weeks T1		P value	Postoperative 5 Months T2		P Value
		Mean	SD	Mean	SD		Mean	SD	
OQLQ score	0-88	43.27	17.23	39.94	17.79	.14	29.21	13.27	0.01
Social	0-32	13.49	7.13	12.24	6.41	.11	9.05	5.54	0.02
Facial esthetics	0-20	14.58	3.64	11.37	3.32	.01	9.57	3.39	0.01
Oral function	0-20	10.21	4.23	10.85	4.87	.15	5.61	2.21	0.02
Awareness	0-16	8.62	3.36	8.17	3.77	.14	7.74	3.52	0.11

Discussion

Recently, there has been a shift in favor of this method for evaluating patient-centered outcomes after surgical operations [19]. Collaborative decision-making during treatment planning, provision of information for "informed consent," and incorporation of patients' subjective perceptions of treatment efficacy into physicians' evaluation of treatment outcomes have all been demonstrated to be advantageous outcomes of patient-centered evaluations.

Orthognathic surgery patients were more likely to report therapeutic dissatisfaction if they had unanticipated complications after the procedure [20-22]. In our study all the patients were informed in detail about the surgical procedure and expected complications and delay in recovery. If we want to provide patients accurate information about the results they may expect from orthognathic surgery, we must first determine how the treatment will affect their quality of life. After 5 weeks, patients' physical and mental health significantly declined, impacting their health-related quality of life. In particular, patients' abilities to carry out routine physical chores, execute their job duties, and interact socially significantly declined [19]. This is in accordance to our study that patients were unable to get back to their office for the first 15 days of healing period. Along with mild to severe bodily pain, patients experienced low vitality, emotional harm, and exhaustion throughout the early stages of recovery. Quality of life in relation to health (as assessed by SF-36 scores) returned to pre-surgery levels five months later. Impressively, patients' emotional status showed a significant improvement, indicating that emotional health improves within five months after orthognathic surgery.

In addition to orofacial edema, pain, and paraesthesia, these results show that orthognathic surgery has far-reaching consequences. Consequently, it is essential to let patients know that their general health will also be affected by orthognathic surgery in the first 2 week post-surgery period.. Functional limitation ratings on the Oral Health Impact Profile-14 (OHIP-14) questionnaire, which measures oral health-related quality of life, decreased significantly after 5 weeks. The oral side effects of the surgery were a known factor in predicting this decrease. However, mental health significantly improved due to better esthetics and function. The quality of life related to mouth health showed a significant improvement throughout the 5-month assessment, suggesting that orthognathic surgery might improve oral health. Results showed that orthognathic surgery significantly improved quality of life, especially in regard to facial aesthetics, even after just 5 weeks, as measured by the condition-specific OQLQ. Dentofacial abnormalities may be successfully corrected with orthognathic surgery, however the OQLQ questionnaire places particular emphasis on dentofacial experiences. Therefore, in comparison to generic health and generic oral health methods, this methodology may discover improvements in life quality at an earlier stage. The individual's social abilities, ability to execute oral functions, and facial appearance had all improved significantly in the first 5 week post-surgery period.. Consistent with previous studies that used this specific measure to assess improvements in quality of life after orthognathic surgery, the current study confirms those findings [15,16].

Conclusions

QOL across several well-being-related indicators had clearly declined by the sixth week. Most of the patients were satisfied with the better occlusion and esthetics after the surgery. As per OHIP domain assessment there was great improvement in psychological and emotional wellbeing of the patient after surgery. This improvement was clearly noticeable in all the domains. Hence this study showed that there is significant overall improvement in the quality of life after orthognathic surgery. But a larger sample size would be required to get some more statistically better indicators.

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