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Original research

## Assessment of changes in quality of life in patients with Dentofacial deformities after orthognathic surgery—A study in Nepalese population

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### ABSTRACT

**Objective:** To assess the changes in quality of life of Nepalese patients with Dentofacial deformities after orthognathic surgery using generic health related, short form oral health impact profile and condition specific quality of life questionnaires.

**Methods:** Fourteen patients who underwent orthognathic surgery were assessed pre-operatively (P0) and eight to twelve months post-operatively. Short form health survey (SF-36), short form oral health impact profile (OHIP-14) and orthognathic quality of life questionnaires (OQLQ) was used to assess generic health related quality of life, generic oral health related quality of life and condition specific quality of life respectively.

**Results:** There was significant ( $P < 0.05$ ) improvement in role limitation due to physical health, role limitation due to emotional well being, energy/fatigue and social function after surgery. There was significant decrease ( $P < 0.05$ ) in five out of seven domain score of OHIP-14 as well as overall OHIP-14 score. Similarly all domain scores of OQLQ also showed a significant ( $P < 0.05$ ) decrease in their score suggesting improvement of quality of life post orthognathic surgery.

**Conclusion:** Significant improvement in QOL occurs after orthognathic surgery when carried out in patients with dentofacial deformities.

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### 1. Introduction

Dentofacial deformities greatly influence the patient's personal and professional relationship because these patients are dissatisfied with their physical appearance [1,2]. Orthognathic surgery combined with orthodontic therapy is commonly performed for these types of patients to correct the dentofacial deformities [3]. Orthognathic surgery not only improves the aesthetics and function but it also significantly improves the psychological status of the patient [4]. Orthognathic surgery greatly influences the quality of life (QOL) of the patients with dentofacial deformities and results in a significant improvement in QOL [3,5,6]. Assessment of the impact of diseases and conditions on QOL is complex so use of generic health, generic oral health and condition specific measures have been developed for their assessment [7]. Generic health measures aim to assess the impact of different health states on QOL irrespective of the underlying disease or condition [8]. Generic oral

health measures aim to assess the impact of oral health conditions on QOL [9]. Condition-specific measures aim to assess the impact of a particular disease or condition on QOL [7]. The history of orthognathic surgery is relatively new in Nepal. Our hospital is the first and one of the few centres in Nepal which has been providing the service of orthognathic surgery to the patients routinely since last seven years. The present study aims to assess the QOL after orthognathic surgery in Nepalese population using generic health, generic oral health and condition specific questionnaires which will be first of its kind in this country.

### 2. Materials and methods

The study was carried out after approval from the institutional review board. A total of 14 patients who completed pre-surgical orthodontic treatment and were about to undergo orthognathic surgery were included in the study after obtaining informed consent. They were followed at eight to twelve months following surgery. The exclusion criteria were patients with physical disability, congenital deformities as cleft lip and palate, symptoms of pain or discomfort in any other part of the body and history of previous jaw surgery.

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**Table 1**  
Comparison of Mean scores of generic health related QOL between P0 and P1.

SF-36 domains	Pre-operative (P0) Mean $\pm$ S.D.	Post-surgery (P1) Mean $\pm$ S.D.	Z	Significance
Physical functioning [0–100]	87.9 $\pm$ 10.3	89.1 $\pm$ 9.5	–1.7	0.084
Role limitation due to physical health [0–100]	76.8 $\pm$ 18.3	78.8 $\pm$ 16.7	–2.7	<b>0.017*</b>
Role limitation due to emotional problem [0–100]	63.7 $\pm$ 22.3	93.1 $\pm$ 11.2	–3.3	<b>0.001*</b>
Energy/Fatigue [0–100]	55.7 $\pm$ 18.9	56.7 $\pm$ 18.6	–2.3	<b>0.020*</b>
Emotional well being [0–100]	68.0 $\pm$ 15.7	67.9 $\pm$ 15.8	–0.1	0.902
Social function [0–100]	75.0 $\pm$ 9.8	90.9 $\pm$ 7.7	–3.0	<b>0.003*</b>
Pain [0–100]	81.1 $\pm$ 5.9	80.8 $\pm$ 6.1	–1.4	0.177
General Health [0–100]	67.9 $\pm$ 6.4	67.6 $\pm$ 6.2	–1.1	0.257

\*  $P < 0.05$  Wilcoxon Signed Ranks Test.

### 2.1. Data collection

English version of short form health survey questionnaires (SF-36, generic health related QOL assessment) [10], Nepalese version of oral health impact profile questionnaires (OHIP-14) [11] and English version of orthognathic quality of life questionnaires (OQLQ, condition specific QOL assessment) [12] were given to the patients for self completion. All the patients were clearly explained about the questions and methods of grading the scores.

Reliable and valid versions of SF-36, generic health related QOL questionnaires and orthognathic quality of life questionnaires (OQLQ) in Nepali language were not available. Since this study was done on patients who required and were able to afford orthognathic surgery in Nepal, all the patients in our study group were well educated and could understand English very well, therefore English versions of SF-36 and OQLQ were used. The English versions of SF-36 and OQLQ questionnaires had been previously assessed to be valid and reliable [10,12].

For, Oral health impact profile questionnaires (OHIP-14) a pretested reliable and valid Nepalese version were available so it was used [11]. All patients were clearly able to understand all the questions of SF-36, OQLQ (in English) and OHIP-14 (in Nepali).

SF-36 questionnaires consists of eight health domains including physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health. These questionnaires focus on the impact of physical and mental status of a person on QOL. The possible scores based on scoring algorithm ranges between 0 and 100, where 0 represents the worst possible and 100 represents the best possible health related QOL [13].

The impact of oral health on a person's QOL is determined by OHIP-14 questionnaires. OHIP-14 questionnaires consist of seven domains which includes functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap. Response to each question is graded between 0 and 4 where 0 is never and 4 are very often. The total score may range between 0 and 56 where 0 means that there is no impact of oral health on QOL and 56 means the worst impact of oral health on a person's QOL.

The impact of dentofacial deformity on QOL is assessed by orthognathic quality of life questionnaires (OQLQ); a condition specific QOL questionnaires. This is a 22 item questionnaire containing

4 domains. The four domains are facial aesthetics (5 questions), oral function (5 questions), awareness of dentofacial aesthetics (4 questions) and social aspects of dentofacial deformity (8 questions). The responses to each question are rated on 4 point scale with score between 1 and 4. The score 1 means "bothers you a little" and score 4 means "bothers you a lot". The total score can range between 0 and 88 and lower score means better QOL whereas higher score means poor QOL.

The questionnaires were completed before surgery (P0) and at about eight to twelve months following surgery (P1).

### 2.2. Data analysis

The statistical package for social sciences (SPSS) version 20.0 was used for analysis. The level of significance was  $p < 0.05$ . The domain scores for SF-36, OHIP-14 and OQLQ at P0 and P1 were calculated according to their scoring algorithm. Similarly overall OHIP-14 and overall OQLQ scores were also calculated. Data did not follow Normal distribution. Mean and standard deviations were calculated and changes in scores between P0 and P1 were evaluated by Wilcoxon signed rank test.

## 3. Results

The total number of patients was 14, out of which nine were male and five were female. The mean age of the patients at surgery was 21.7 (21.78  $\pm$  2.29) years. Mean follow up period was 9.2 months. Out of 14 patients, 12 underwent bimaxillary surgery where as two patients had single jaw surgery.

### 3.1. Generic health related QOL (SF-36)

There was a significant improvement in role limitation due to physical health, role limitation due to emotional well being, energy/fatigue and social function after surgery. Other domains did not show any significant improvement (Table 1).

### 3.2. Oral health impact profile (OHIP-14)

Five out of seven domains had a significant decrease in OHIP score in the post-operative follow up period. Over all OHIP score

**Table 2**  
Comparison of mean scores of oral health impact profile (OHIP-14) between P0 and P1.

OHIP-14 domains	Before surgery (P0) Mean $\pm$ S.D.	After surgery (P1) Mean $\pm$ S.D.	Z	Significance
Functional Limitation [0–8]	5.1 $\pm$ 1.2	1.5 $\pm$ 0.5	–3.2	<b>0.001*</b>
Physical Pain [0–8]	3.4 $\pm$ 1.0	0.7 $\pm$ 0.5	–3.4	<b>0.001*</b>
Psychological discomfort [0–8]	4.4 $\pm$ 0.8	0.5 $\pm$ 0.5	–3.3	<b>0.001*</b>
Physical disability [0–8]	3.4 $\pm$ 0.8	0.4 $\pm$ 0.5	–3.3	<b>0.001*</b>
Psychological disability [0–8]	3.6 $\pm$ 0.8	0.4 $\pm$ 0.5	–3.3	<b>0.001*</b>
Social disability [0–8]	2.4 $\pm$ 1.1	2.4 $\pm$ 1.2	–0.6	0.564
Handicap [0–8]	2.1 $\pm$ 1.0	1.9 $\pm$ 0.9	–1.4	0.157
OHIP-14 score [0–56]	24.5 $\pm$ 3.3	3.9 $\pm$ 1.2	–3.3	<b>0.001*</b>

\*  $P < 0.05$  Wilcoxon Signed Ranks Test.

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