

Measuring oral health related quality of life before and after dental treatment in patients in a remote area in Uttarakhand

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ABSTRACT

Background. There is a strong connection between oral health and quality of life which is often overlooked by people. It is important to improve the awareness of importance of oral health among common public. **Objective.** To determine “Oral Health Related Quality of Life (OHRQoL) of patients before and after dental treatment among service personnel in a remote area in Uttarakhand. It helps to ascertain the responsiveness of patients for developments in oral health after dental treatment and level of awareness for overall wellbeing. **Material and methods.** A structured questionnaire was used with a “5-Point Likert Scale” ranging from 1 to 5 (to determine severity level of the problem that might be affecting their quality of life). Informed express consent was obtained from the respondents. A sample size of 200 was used who have been through dental treatment with a follow-up for 2 weeks and interviewed before and after treatment. Study design was descriptive in nature with progressive element. **Results.** Considering the “statistical analysis”, there was a “significant difference” among post- and pre-treatment mean scores ($p < 0.01$). Overall, there is an improvement in quality of life after getting dental treatment among patients.

Keywords – Quality of life, Oral health, OHRQoL

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INTRODUCTION

WHO mentions that the “Quality of Life (QoL)” is a perception of a person about their life in context of circumstances and culture where they live and in terms of their expectations, goals, concerns, and standards. The QoL has emerged as a multidimensional theory which includes several factors like emotional, physical, and social¹⁻³. The effect of interventions on perceived oral health conditions and oral disorders as well as “oral health related quality of life (OHRQoL)” is a vital health component¹⁰.

Locker and Slade¹², Locker and Miller¹³, “John et al¹⁴, “McGrath et al^{15,16}, and “Steele et al¹⁷ have already shown the perception of OHRQoL to be associated with oral health issues. Existing questionnaire was used to determine the effect of several dental treatments on Quality of Life, such as Oral Health Impact Profile (OHIP-49)¹⁸⁻²⁰, short version OHIP-14¹⁶ OHRQoL-UK¹⁶, OHRQoL²¹, “Oral Impact on Daily Performance (OIDP)²², and “Children Perception Questionnaire (CPQ)²².

Currently, many longitudinal studies have focused mainly on periodontal disease²⁷, orthodontics²⁹, prosthodontics^{19,30}, and oral surgery^{16,31} with OHRQoL. Improvements have been observed in earlier studies and there was a moderate clinical change in effect size (ES) of OHRQoL^{21,27}.

RESEARCH GAP

There is limited research on the response of “Oral Health Related Quality of Life (OHRQoL)” on overall wellbeing of *patients before and after treatment* in the present setting and in this specific cohort. The study is aimed to determine OHRQoL of patients and their responsiveness for improvements.

OBJECTIVES

- (a) To determine “Oral Health Related Quality of Life (OHRQoL)” of patients before and after treatment.
- (b) To check the level of responsiveness for changes in oral health quality and awareness of their overall wellbeing after dental treatment

RESEARCH QUESTION

Is there any improvements in “Oral Health Related Quality of Life (OHRQoL)” among patients after treatment?

MATERIAL AND METHODS

We conducted a follow-up study on patients falling under a specific age group (18 to 65 years old) at Dental Section for service persons deployed at a remote area in Uttarakhand. These patients have self-reported with a wide spectrum of oral health pathologies. There were 200 voluntary participants in total who had gone through a regular preventive/screening dental check-up. Each patient had signed an informed consent before participating in the study. A close-ended “self-explanatory” questionnaire was handed over to each patient having 24 questions categorised into 6 factors that affects their quality of life by interfering with daily activities and productivity. Treatment was provided after the initial response. After 14 days of treatment, patients were recalled. Patients got the same questionnaire again and their responses were recorded. The researchers compared the responses before and after treatment.

INCLUSION CRITERIA

- (a) Patients with dental morbidity that requires dental intervention.
- (b) Patients with age group between 18 to 65 years.
- (c) Patients staying in the present geographic area for atleast 1 yr

(d) Patients with no co morbidity that can affect the QoL.

EXCLUSION CRITERIA

- (a) Patients who haven't completed root canal treatment.
- (b) Patients with root caries.
- (c) Patients with existing co- morbidities.
- (d) Patients who needed emergency dental treatment.

STUDY TOOL

We obtained demographic information like age group, gender, work status, etc. in questionnaire and other details by asking 24 questions under 6 categories. These are as under: -

- (a) Functional difficulties
- (b) Social interaction
- (c) Comfort and well-being
- (d) Food lodgement
- (e) Aesthetics
- (f) Gingival issues

We received responses through a 5-point Likert scale questionnaire which explores the severity of factors affecting quality of life for patients. For each factor, there were different responses as per Likert scale. Responses were then turned into a 1 to 5 scale (ranging from least affecting or no effect to most difficulty or effect on quality of life). Hence, a lower score means a better quality of life and vice versa.

RESULTS

Out of 200 patients who participated in the survey, there were 62% males and 38% females and 70% of those patients were aged from 20 to 42 years old. Majority of patients (42.5%, n=85) reported

pain, 32 patients (16%) reported the problem of sensitivity, 28 patients (14%) had functional difficulty, 17 patients (8.5%) complained food lodgement, 22 patients (11%) reported gingival issues, 12 patients (6%) reported aesthetic problems, and 4 patients (2%) had problem with social interaction (Figure 1).

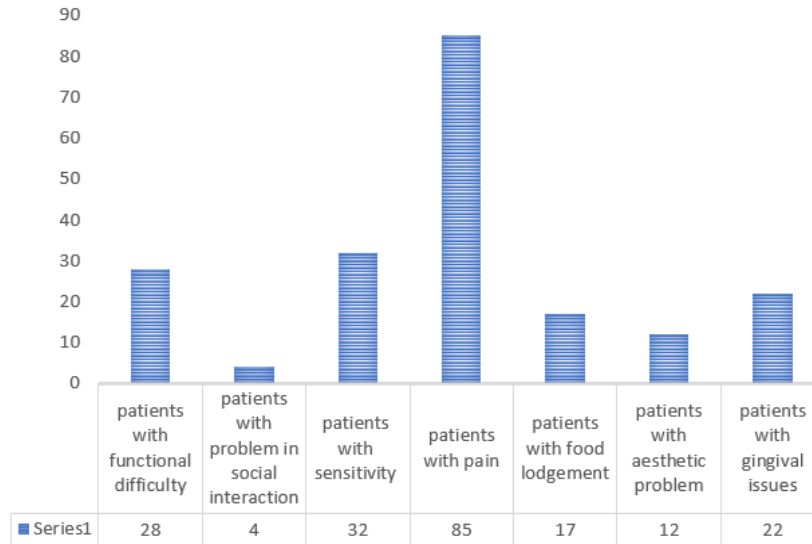


Chart 1 – Participants in the survey with reported problems

STATISTICAL ANALYSIS

Out of 28 people who reported functional difficulty, the mean value before dental treatment was 3.25 (SD = 1.20) while the Mean value of responses after treatment was 1.17 (SD = 0.55). There were four respondents who reported social interaction problems. After treatment, the Mean score was 1, which means they had least problem with social interaction. The Mean score of 32 people who reported sensitivity before treatment was 3.38 (SD = 1.26), while it was only 1.25 (SD = 0.84) after treatment. The Mean score for 85 patients who reported pain before treatment was 3.47 (SD = 1.09), while it was 1.2 (SD = 0.69) for pain after treatment. When it comes to food lodgement issues before treatment, the mean score was 3.4 (SD = 0.8), which was reduced to 1 after treatment. There were 12 patients who reported

aesthetic problems. The mean score for before treatment was 4.08 (SD= 0.99) and it was reduced to 1.5 (SD = 0.90). Hence, there is a statistically significant difference in results before and after treatment (Table 1).

Table 1 - Descriptive Statistics

	N	Min	Max	Mean	SD
Functional difficulty before	28	1.00	5.00	3.2500	1.20570
Functional difficulty after	28	1.00	3.00	1.1786	.54796
Social interaction before	4	3.00	3.00	3.0000	.00000
Social interaction after	4	1.00	1.00	1.0000	.00000
Sensitivity before	32	1.00	5.00	3.3750	1.26364
Sensitivity after	32	1.00	5.00	1.2500	.84242
Pain before	85	2.00	5.00	3.4706	1.08659
Pain after	85	1.00	4.00	1.2000	.68661
Food lodgement before	17	2.00	5.00	3.4118	.79521
Food lodgement after	17	1.00	1.00	1.0000	.00000
Aesthetic problem before	12	3.00	5.00	4.0833	.99620
Aesthetic problem after	12	1.00	3.00	1.5000	.90453

T-Test

To further analyse improvements in “Oral Health Related Quality of Life (OHRQoL)” of patients after treatment, we have conducted paired samples T-test. Here, 6 factors are defined as 6 different pairs. Pair 1 consists of social interaction. The T value of Pair 2 - sensitivity is 9.922 while standard deviation

before treatment was 1.26 and after treatment was 0.84. For Pair 3, Standard Deviation value is 1.08 before treatment and 0.84 after treatment for pain. The Pair 3 got a T value of 20.596. In Pair 4, the T value stands at 12.505 and standard deviation is 0.00 for before and after treatment for food lodgement. In Pair 5, standard deviation for aesthetic problems before treatment was 0.99 and 0.90 for after treatment. In Pair 6, T value stands at 10.42 for functional difficulty while standard deviation at 1.2 for before treatment and 0.54 for after treatment (Table 2)

Table 2 - Paired Samples Statistics

Factors	Attribute	Mean	N	SD	SE Mean	T value	P value
Pair 1	Social interaction before	3.0000	4	.00000	.00000	-	-
	Social interaction after	1.0000	4	.00000	.00000		
Pair 2	Sensitivity before	3.3750	32	1.26364	.22338		
	Sensitivity after	1.2500	32	.84242	.14892	9.922	.000
Pair 3	Pain before	3.4706	85	1.08659	.11786		
	Pain after	1.2000	85	.68661	.07447	20.596	.000
Pair 4	Food lodgement before	3.4118	17	.79521	.19287		
	Food lodgement after	1.0000	17	.00000	.00000	12.505	.000
Pair 5	Aesthetic problem before	4.0833	12	.99620	.28758		
	Aesthetic problem after	1.5000	12	.90453	.26112	9.940	.000
Pair 6	Functional difficulty before	3.2500	28	1.20570	.22786	10.423	.000
	Functional difficulty after	1.1786	28	.54796	.10356		

When it comes to overall value, the Mean score stands at 3.44 before treatment and 1.20 after treatment, and standard deviation scores 1.10 for before treatment and 0.67 after treatment, with T value of 29.28. Since the value of $P < 0.01$, there is a statistical difference between before and after treatment (Table 3). All the parameters given above have reduced the mean value after treatment. Hence, there is a significant decrease in mean score in overall scale.

Table 3 - Paired Samples Statistics

Factors	Attribute	Mean	N	SD	SE Mean	T value	P value
Pair 1	Overall, before	3.4438	178	1.10453	.08279	29.283	0.000
	Overall, after	1.2022	178	.67531	.05062		

DISCUSSION

A very vital socio-dental indicator arises with the personal estimation of patients on their oral health condition and their “oral health-related quality of life” with influence of oral diseases. It is especially true in people who are elderly and middle aged. Edentulism is at a high level as we age and we need a broad concept for oral health¹⁰. It is also important to determine the location of tooth loss as it affects the quality of life for patients. There is strong evidence that associates tooth loss with “impairment of OHRQoL” and distribution and location of tooth loss affects impairment severity. Especially after 12 months of adaptation, most of the issues go away after dental treatment with expert dentists³³.

The healthcare sector has seen a great paradigm change when it comes to determining treatment needs and results with a patient's perspective instead of relying on clinicians' perspective alone. Discomfort and pain that are sourced from dental health issues have been considered in treatment planning and diagnosis for a long time. It is, however, the outcome and impact of those oral health issues on quality of life or daily life that are vital to understand the stress of diseases and ultimately to determine the benefit of cure for improving the lives of patients.

In this study, we have found significant improvements in the quality of life of patients after a few weeks of dental treatment. Out of 200 survey participants, 28 patients reported problems with functional difficulty. We have asked their difficulty on a scale of 1 to 5 (i.e., 1 being least difficult and 5 being highest difficulty). Before treatment, 14 patients scored their difficulty on a scale of 3. Rest 6 patients scored their difficulty to 5, 3 patients voted at scale 4, 2 people at scale 2 and three patients at scale 1. After treatment, 25 patients scored their difficulty to scale 1, 2 patients to scale 3 and one patient to scale 4. There was a significant improvement after treatment of functional difficulty.

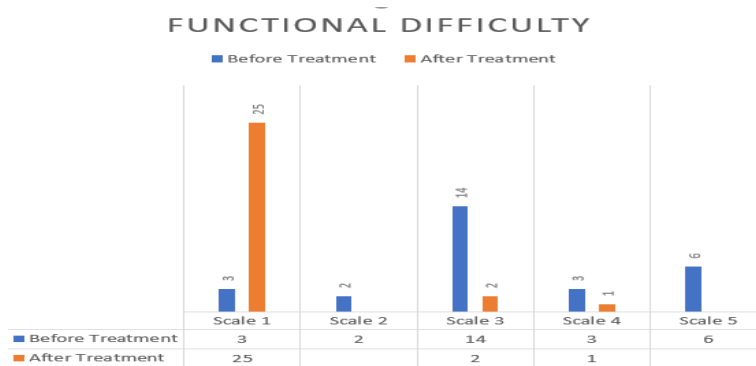


Chart 2 – Functional Difficulty

Similarly, four patients reported problems in social interaction before treatment. After treatment, all of the patients have successfully resolved this problem.

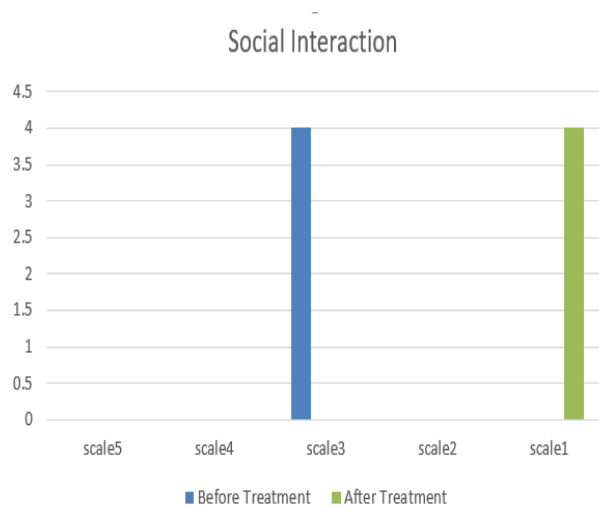


Chart 3 – Problem in Social Interaction

Some patients also had problems with their sensitive teeth. In total, 32 patients reported this problem. Before treatment, 11 patients rated their problem on a scale of 3, 9 patients rated their problem on a scale of 5, 6 patients on a scale of 2, 4 patients on a scale of 4, and only two patients on a scale of 1. After treatment, 29 patients rated their problem on a scale of 1, and only 2 and 1 patients rated their problems on scales of 3 and 5 respectively.

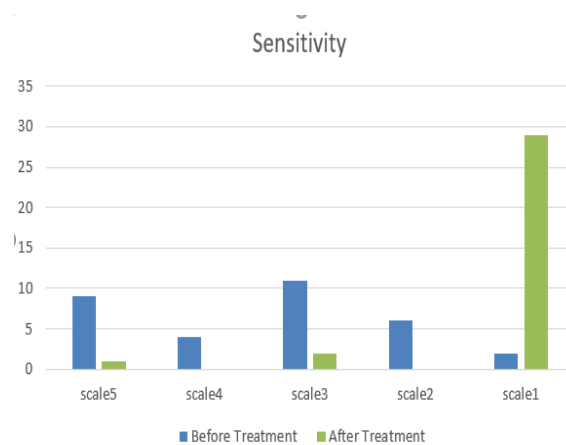


Chart 4 – Problem with sensitivity

In this study, the majority (n=85) patients reported having the problem of pain. Before treatment, 33 patients rated their pain on a scale of 3, 22 patients rated their pain on a scale of 5, 17 patients rated their pain on a scale of 2, and 13 patients on a scale of 4. After treatment, the majority (n=77) of patients rated their pain on a scale of 1, 4 patients rated their pain on a scale of 4, 3 patients rated their pain on a scale of 2, and 1 patient rated their pain on a scale of 3.

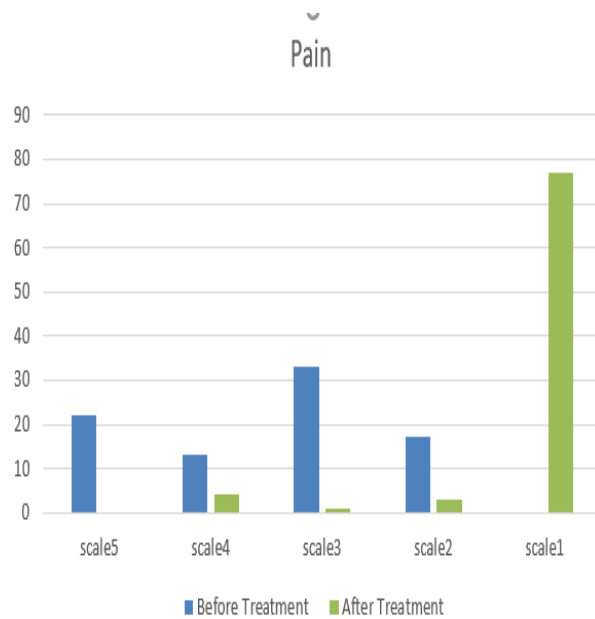


Chart 5 – Patients Reported the problem of pain

Total 17 patients reported problems with food lodging. Before treatment, 10 patients rated their problem on a scale of 3, four patients rated their problem on a scale of 4, 2 patients on a scale of 5, and 1 patient on a scale of 2. After treatment, all of the patients rated their problem on a scale of 1. It again shows significant improvement after treatment.

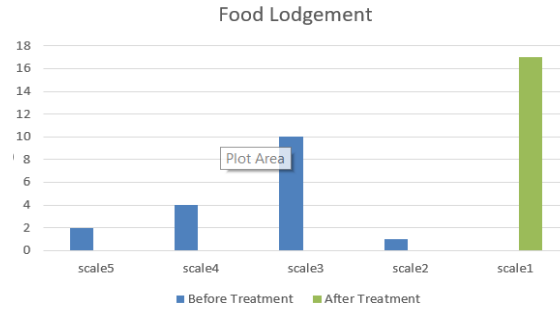


Chart 6 – Food Lodgement

12 patients reported their aesthetic problem. 6 patients reported their problem on a scale of 5. 5 patients rated their problem on a scale of 3, and 1 patient rated their problem on a scale of 4. After treatment, 9 patients reported their problem on a scale of 1, and 3 patients on a scale of 3.

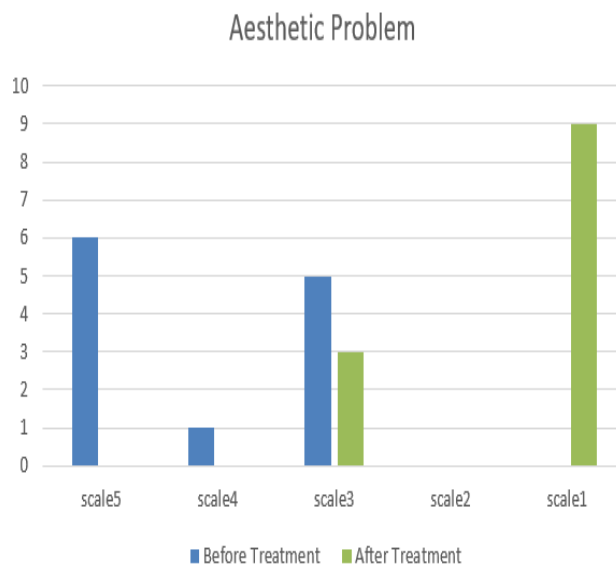


Chart 7 – Aesthetic Problem

In this study, 22 patients reported their problem with gingival tissue. Here, 15 patients ranked their problem on a scale of 4, four patients ranked their problem on a scale of 3, and 3 patients ranked their problem on a scale of 5. After treatment, 17 patients ranked their problem on a scale of 1, and 5 patients ranked their problem on a scale of 2.

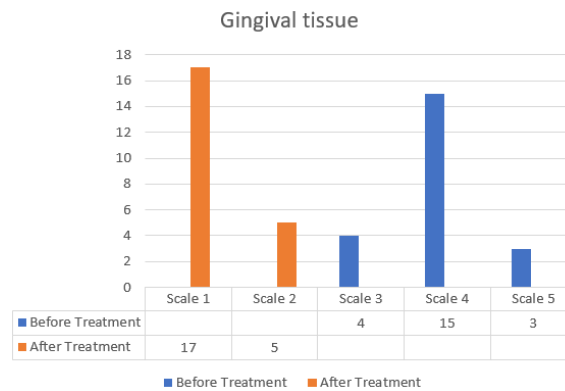


Chart 8 – Patients with Gingival Tissue problem

However, the results we obtained also have some limitations. They cannot be related to patients who have other dental health issues that are not covered in this study. Hence, further studies are needed. In addition, we cannot record the severity of dental issues as they can be evaluated only with certain treatment approaches. In addition, it was not possible to evaluate the particular level of pain due to various problems.

FUTURE SCOPE FOR RESEARCH

Oral health quality is known to be a vital topic in this day and age, considering the ever rise in oral diseases like precancerous conditions and oral cancers. This study is an attempt to generate awareness about quality of life among patients who need dental treatment. This concept is very promising for future studies to improve the “oral health-related quality of life”.

CONCLUSION

The study could suggest a significant enhancement in patients’ quality of life living at service persons deployed at a remote area in Uttarakhand after getting dental treatment. There has been an improvement in awareness among patients related to quality of life as they could respond to the questionnaire. The scale of “oral health-related quality of life” found significant responsiveness observations as they practice overall patient care.

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CONTRIBUTION OF AUTHORS: We declare that this work was done by the Col Sunil Verma and Capt Naman Chaturvedi and all liabilities about claims relating to the content of this article will be borne by us.

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