

## Literature Review Article

# Can quality of life index measure oral health over the years? A systematic review

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### Abstract

**Introduction:** The referred quality of life has been increasingly used in dental studies to measure the impact that the dental treatment can cause on the individuals. However, there are few studies that monitor longitudinally this condition. **Objective:** The aim of this study was verify the behavior of the impact of the quality of life of the individuals through a systematic review on observational or interventional longitudinal studies. **Literature review:** The articles were selected in the period from February 5<sup>th</sup> to March 15<sup>th</sup> of 2014, with selection criteria: Objectives of the study, longitudinal studies, assessment of the quality of life of the studied population. The determination of the 24 selected articles was conducted by two examiners and revised together. **Results:** The study generated five tables related to common areas of dentistry: prosthesis, dental caries, geriatric health, orthodontics and oral oncology. The impact achieved in the quality of life of the people with the treatment was not maintained over the years. **Conclusion:** The quality of life of the individuals is little influenced by dental treatments over the years, with the exception of the cases of prosthesis and severe orthodontic treatments. The impact of the quality of life seems to be a measurement of occasional use, preferably carried soon after some oral intervention and not for longitudinal studies in which other factors cannot be controlled.

## Introduction

Quality of life related to the oral health is a term used at the present time to describe or quantify the level of impact of the oral health on the quality of life of an individual. The measurements initially designed as subjective or socioeconomic indexes of the oral health, are now used as reference measurements of the impact on the quality of life. In this context, the functional and psychosocial impacts of perceived dental problems, generated by a composite score, may suggest the perceived changes in the life of the individual.

An issue that is still approached reflects the concern of the studies to show how these measurements were developed [20, 30, 35, 37], however the frequency of the functional and psychosocial impacts of the oral diseases may still establish equivocally the meaning and the importance of this impact on the quality of life [24]. This can be well defined after the conclusion of a dental treatment [33], as well as the measurement of a direct relation between the social impact and the dental care necessity perceived by the patient [26]. However, how these oral disorders really affect the quality of life of an individual over the time have not been clearly elucidated in the literature yet. That is, what happens with the quality of life indexes of these individuals after the treatment or re-treatment and after some years of the oral interventions. In face of what is exposed, this study aimed at answering through a systematic review the behavior of the quality of life impact described in observational longitudinal studies or of the intervention in the individuals.

## Data collection and analysis

For the conduction of this systematic revision, the articles were selected in the period from February 5<sup>th</sup> to March 15<sup>th</sup> of 2014, by two independent examiners (Kappa > 0.8). The researched databases were: Medline (1997-2014), Scopus, Cochrane Library and Lilacs, in English, Portuguese and Spanish. The keywords used were: quality of life, oral health and longitudinal studies. The criteria of inclusion in this first stage were: Objectives of the study, longitudinal studies, assessment of the quality of life of the studied population. 71 articles were detected at Scopus (limited to dentistry), 548 at Medline and six at Lilacs. Being that no reference was found at Cochrane Library. Of these, 35 articles were selected initially without duplicated. For this stage, the exclusion criteria were: abstracts not

in accordance with the objective of the research (Flowchart). In an agreement, four articles were excluded by the two examiners and the reviewer of the study after abstract analyses.

Making use of pre-structured instruments in full text, the 31 selected articles brought the following complementary information: authors, local where the study was carried out, year of the publication, journal, period of the study, objective of the study, age or age range of the studied population, quality of life index used, main findings and/or conclusions.

Of these, seven failed to meet the inclusion criteria. Reasons for exclusion were: three studies were not longitudinal [1, 18, 19], one study did not specify well the quality of life [28], one study was the description of a new index [11], one study was not related to oral health [21] and one study used the same data [9].

At the end, 24 articles were selected for a careful analysis and reported according to systematic review, for presenting similar characteristics the authors found it convenient to divide the subjects by common areas of the dentistry. This way, the articles were grouped in five big tables according to the affinity of the area once, with this division, more specific data was generated for the conclusions.

## Results and Discussion

On the table I, regarding the dental prosthesis, the quality of life indexes presented improvements and are maintained under the initial one after some years. In either cases, with prosthesis supported or not by implants, there is a decrease in the quality of life indexes [3, 2, 4, 8, 17, 23, 26, 29, 36]. However, in the implant supported patients the improvement in the quality of life was higher [3, 4, 8, 29]. For treatments of conventional denture, the patients who requested prosthesis over the implant, but received conventional prosthesis, obtained few changes in the quality of life [3]. However, in patients who requested conventional prosthesis and received them, there was an improvement in the quality of life [23]. Removable dentures require a longer period for the improvement in the quality of life of the patients [17, 36]. According to the authors, this is the adaptation time. The improvement in the quality of life can also be associated with the desire or personal expectations that suffer interferences with the time [23].

By the results found in table II, children without dental caries have a quality of life, in general,

better than the ones who have dental caries [13]. However, the earlier treatment of these children with caries improves their quality of life according to the parents along the time. Now, in adolescents, the presence or absence of dental caries does not affect their quality of life [16]. However, according to the author, the lack of a strong association between the incidence of caries and the quality of life along the three years in these adolescents, also raises questions about the capacity of an index to reflect changes in the experience of caries and its effect on the quality of life in this population.

In the area of oral oncology (table III) the quality of life seems to be more associated to the size of the injuries and their recovery expectations. Being that the physical aspects of the quality of life always reduce after the surgery they, however, start to return to the normality after 6 months or 1 year [5, 27, 31, 32]. Factor associated mainly to the complaint about difficulties in the mastication, besides difficulties to swallow, pain and lack of saliva [5]. Suggesting that the oral functional deficiency continues even after the surgeries [27].

Longitudinal studies about the quality of life, oral health and more senior citizens (table IV) showed that changes in the oral clinical status along the time are reflected directly on the quality of life of these people [7, 10, 14, 15, 22]. In this case in especial, two studies were maintained, due to their use of different measures of the quality of life of these same studied people [7, 22]. Social behaviors such as the low educational level and personal behaviors like smoking, directly affect the oral health-related and general quality of life of this population [7, 14]. With the increasing age, other health problems also affect the quality of life of this population [10, 15]. However, for the oral health the main complaints regarding the decrease in this quality of life are: toothache, abscesses and difficulties in the mastication due to tooth losses. Patients satisfied with the dental appearance describe a better quality of life [22].

Longitudinal studies about the quality of life and orthodontics (table V) showed that only patients with severe orthodontic problems presented changes in the quality of life along the years, mainly regarding the women [6, 12, 25, 34, 38]. In the surgical cases, the quality of life improves only after the performance of the orthognathic surgery [12, 25]. It was surprising the conclusion that only the orthodontic treatment does not influence the quality of life in adolescent or adult patients [6, 38]. Nevertheless, the orthodontic treatment improves

the appearance, oral function, health and social well-being of the people.

## Conclusion

By means of the proposed objective of the study, it is observed that the oral health-related quality of life of the people undergo changes during the entire studied period. Prosthesis and severe orthodontic treatments are the procedures that can maintain the impact on the improvement of the quality of life the longer. Our study could not determine the exact time in which these quality of life measurements start to recede, so other studies shall be conducted verifying this question. Some cohort studies which also generate results in defined demographic populations should be seen with endorsement. Due to the fact that these articles use measurements in scales, it is difficult the comparison of all the studies as a single one, as well as a single conclusion, but the study suggests us a scientific evidence that the quality of life of the people is little influenced by dental treatments along the years, with the exception in the case of prosthesis and orthodontic severe dental treatments. In summary, oral health-related quality of life is a measurement that should be used in a timelier manner, preferably soon after some oral intervention and not for longitudinal studies in which other factors cannot be controlled.

## Implications for research

Studies that aim at measuring the impact of the quality of life make use of indexes that suffer influence from both the lifestyle that the people and different habits and places. Consequently, studies with more uniform groups are valid for assessing the impact that the dentistry can cause on the life of these people along the time. The use of different instruments of quality of life can measure the additional positive aspects of patients regarding their perceptions of the oral health in specific cases (such as of the prosthesis), as well as in negative aspects (such as of misguided treatments). Articles that can better elucidate these aspects, in which it is also achieved the homogeneity of the dental treatment and successive collections regarding the quality of life of these people in more controlled periods become necessary.

**Table I** - Longitudinal studies on the quality of life and prosthesis

<b>Authors and objective of the study</b>	<b>Local</b>	<b>Index</b>	<b>Time</b>	<b>Sample</b>	<b>Age</b>	<b>Results</b>
Allen <i>et al.</i> [3] Evaluate the quality of life of people who received prosthesis under implants and conventional prosthesis	Newcastle - United Kingdom	OHIP 49	Before the treatment and 3 months after the placement of the prosthesis	75 patients	Average between 55 and 65 years old	There was a decrease in the OHIP index of the patients, however the greatest decrease was in the patients who received implants
Allen <i>et al.</i> [4] Evaluate the psychosocial well-being and the quality of life of individuals with complete and implant supported dentures	Newcastle - United Kingdom	OHIP 49	3 years, initial and final	98 patients	Average between 60 and 65 years old	The quality of life increase for who received prosthesis under implants. It was equal for the control that had teeth
John <i>et al.</i> [17] Compare the quality of life differences in patients with treatment of fixed, removable and complete dentures	Halle-Wittenberg, Germany	OHIP 49 items	12 months (Initial, 1 month, 6 months and 1 year)	107 Patients	from 24 to 82 years old	The 3 groups had a decrease in the OHIP index
Meng and Gilbert [23] Verify if the improvement in the mastication ability improves the quality of life of the patient	Florida, USA	Satisfaction in the mastication ability, yes or no	Initial, 6 months, 12, 18 and 24 months	873 participants	45 years old or older	The majority of the edentulous improves the quality of life with the prosthesis
Berretin-Felix <i>et al.</i> [8] Verify the quality of life in patients with supported implant denture	Bauru, Brazil	OHIP 14, OIDP and World Health Organization Quality of Life - WHOQOL-BREF	Initial, 3, 6 and 18 months	15 edentulous	Average of 66 years old	There was a change in the quality of life of the physical and dental factors, but not in the social factors
Alfadda <i>et al.</i> [2] Monitor the quality of life of the patients for 5 years regarding two types of conventional dental implants and immediate loading	Toronto, Canada	OHIP -20	Initial, 1 year and 5 years	77 patients	Edentulous for more than 9 years	The quality of life index decreased in the period of 1 year and then maintained the same level
Stober <i>et al.</i> [36] Evaluate the quality of life in patients with complete dentures	Heidelberg, Germany	OHIP-EDENT with 19 items. And satisfaction of the patient	Initial, 6 months, 1 year and 2 years	52 edentulous	from 45 to 87 years old	The quality of life indexes decreased in the 2 years of the study
Petricevic <i>et al.</i> [29] Evaluate the difference in the quality of life of patients with removable denture and implant supported prosthesis in the posterior region.	Zagreb, Croatia	OHIP49	Initial, 3 weeks after the placement of the prosthesis and 3 years later	62 individuals	from 37 to 72 years old	There was a decrease in the OHIP index for both groups and it was maintained in the 3 <sup>rd</sup> year

**Table II** - Longitudinal studies about the quality of life and dental caries in children and adolescents

<b>Authors and objective of the study</b>	<b>Local</b>	<b>Index</b>	<b>Time</b>	<b>Sample</b>	<b>Age</b>	<b>Results</b>
Cunnion <i>et al.</i> [13] Check the quality of life in children with caries and with no caries and after the treatment	Washington and Columbus, United States	POQL	Initial, 6 months and 12 months	501 parents of the children	Children from 2 to 8 years old	Children with no caries have a better quality of life than the ones with dental caries, according to the parents
Foster Page and Thomson [16] The difference in the quality of life of the adolescents with or with no caries	Taranaki, New Zealand	CPQ 11-14	3 years (initial and final)	430 adolescents. Finished with 255	from 12 and 13 years old to 15 and 16 years old	Lack of a strong association between the incidence of caries and the quality of life

**Table III** - Longitudinal studies about the quality of life and oral oncology

<b>Authors and objective of the study</b>	<b>Local</b>	<b>Index</b>	<b>Time</b>	<b>Sample</b>	<b>Age</b>	<b>Results</b>
Rogers <i>et al.</i> [32] Evaluate if the quality of life of the patients after the first oral surgery improves after 6 months and 1 year later	Liverpool, England	UwQol	1 year	Initial 130 patients, 79 completed the study	Average between 73 and 87 years old	The quality of life index decreased in the first 6 months but started to increase in the second half year
Rogers <i>et al.</i> [31] Evaluate if the quality of life of the patients after the first oral surgery improves after 6, 12 and 18 months and then relate it with the past record of the patient	Liverpool, England	UwQol	18 months (Initial, 6, 12 and 18 months)	Initial 272 patients 239 completed the study	Average of 60 years old for the men and 64 for the women	The physical aspects of the quality of life improved after the surgery, but began to increase again with the time
Andrade <i>et al.</i> [5] Longitudinal monitoring of modifications in the self-rating of the quality of life in patients with oral squamous cell carcinoma	São Paulo, Brazil	UwQol	1 year	Initial 100 patients 66 completed the study	60 years old in average	The quality of life decreases after 1 year
Oskam <i>et al.</i> [27] Evaluate the changes in the quality of life of patients treated for oral and oropharynx cancer for a long period	Amsterdam, Netherlands	The EORTC QLQ-C30 (cancer-specific questionnaire)	11 years (initial, 6 months, 1 year and from 8 to 11 years later)	Initial 80 patients 27 completed the study	from 23 to 74 years old	All the scales of symptoms presented deteriorated values along the monitoring in relation to the basal levels



**Table IV** - Longitudinal studies about the quality of life, oral health and senior population

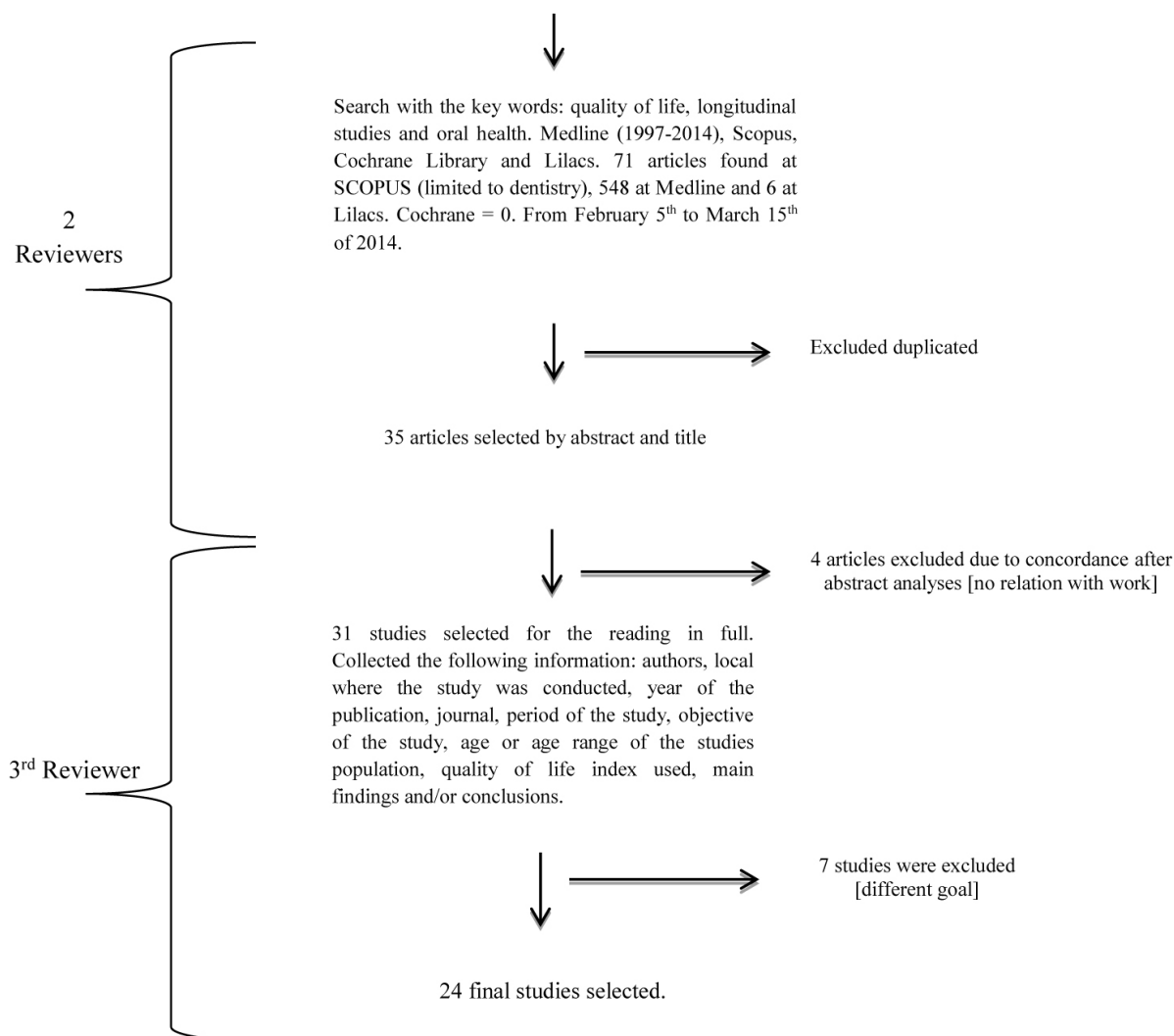
Authors and objective of the study	Local	Index	Time	Sample	Age	Results
Chavers <i>et al.</i> [10] Describe the incidence and the oral standards in adult patients for 2 years. Verify this impact in the quality of life	Florida - USA	Telephone Interview	2 years (6, 12 and 18 and 24 months)	Initial 873 people final 764 people	45 years old or older	The quality of life regarding the dental caries gets worse in the older patients
Meng <i>et al.</i> [22] Evaluate the quality of life of the patients regarding the dental appearance	Florida - USA	Satisfaction with the appearance (Self-rated oral health) by telephone	2 years (every 6 months)	Initial 873 people final 764 people	45 years old or older	The quality of life is better for patients with no tooth stains
Ekback <i>et al.</i> [14] Longitudinal monitoring of changes in the oral health of the patient and impact on the quality of life	Sweden (2 cities)	Interview	15 years (interview in 5 10 and 15 years)	Initial 6346 people and final 4143 people	from 50 to 65 years old	The quality of life decreased mainly in individuals who smoke, have a low level of education and had dental losses
Astrom <i>et al.</i> [7] Verify if the social and behavioral situation of the individual at the age of 50 affect the quality of life at the age of 65 regarding the oral health	Sweden (2 cities)	(OIDP) oral impacts on daily performances	15 years (interview in 5 10 and 15 years)	Initial 6346 people and final 4143 people.	from 50 to 65 years old	The wear of the oral quality was associated with inadequate behaviors
Enoki <i>et al.</i> [15] Verify if the quality of life can be affected by changes in the oral functions in a long period	Osaka - Japan.	GOHAI - Geriatric Oral Health Assessment Index	7 years	Initial 411 people final 130 people	from 60 to 80 years old	There was a decrease in the GOHAI index with the age, however not relevant

**Table V** - Longitudinal studies about the quality of life and orthodontic treatments

Authors and objective of the study	Local	Index	Time	Sample	Age	Results
Cunningham <i>et al.</i> [12] Evaluate and test if the instrument of quality of life could capture this reality in orthognathic patients	South East of England	Orthognathic Quality of Life Questionnaire (OQLQ) and a visual analogue scale (VAS)	Initial, before the surgery and 8 weeks after the orthodontic treatment	Initial 65 people final 62 people	Average of 22 years old	The quality of life improved in all the aspects: Social, functional and aesthetic
Taylor <i>et al.</i> [38] Evaluate if the orthodontic treatment affects the quality of life of the adolescents	Washington - USA	OHIP 14 and SWLS (index of life satisfaction)	2 years (initial and after the orthodontic treatment)	293 patients	from 11 to 14 years old	Malocclusion and orthodontic treatment do not seem to affect the quality of life in general or of the oral health for a measurable level of these adolescents
Rusanen <i>et al.</i> [34] Evaluate the quality of life in patients with severe malocclusion and dental-facial deformities before and after the treatment	Oulu, Finland	OHIP 14	3 years	Initial 249 people and final 170 people	Average of 35 years old	In comparison with the general population, the patients with severe malocclusion report high levels of oral impacts in the quality of life, mainly the women

Arrow <i>et al.</i> [6] Evaluate if the orthodontic treatment affects the life of the person when adult	Adelaide, Australia	OHIP 14 and SWLS (index of life satisfaction)	17 years	Initial 7673 people and final 421 people	from 13 to 30 years old	There was no association between malocclusion and quality of life in the adult life
Murphy <i>et al.</i> [25] Evaluate if the orthognathic surgery improves the quality of life of the patients	Cork, Ireland	(Orthognathic Quality of Life Questionnaire (OQLQ)) and a visual analogue scale (VAS). And Global Transition Scale (GTS)	Initial and 6 months after the surgery	Initial 62 people and final 52 people	from 18 to 38 years old	The clinical impacts were moderate, however the quality of life of the patients after the surgical recovery improved

Definition of the question: What happens with the quality of life index along the years regarding the oral health?



Flowchart - The screening process to select articles for the review

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