Correlation between the expectations of patients and their new complete removable dentures, constructed by undergraduate students.

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ABSTRACT

Most edentulous patients have expectations regarding complete dentures which may impact on their levels of satisfaction.

Aim

To determine whether their expectations influence the satisfaction of patients with new complete dentures constructed by undergraduate dental students.

Objectives

1. To determine the expectations of patients prior to their receiving new complete dentures.
2. To determine whether those expectations influence satisfaction with the new dentures.

Methodology

This observational study used data collected using two questionnaires: Patient Expectation and Oral Health Impact Profile-20. The codings of the questionnaires were aligned to facilitate correlation between the feedback obtained from patients.

Results

The sample comprised 100 patients, whose ages ranged between 56-65 years with a majority of females (72%); 85% were of coloured ethnicity. Reliability testing of the Patient Expectation Questionnaire was completed. Oral Health Impact Profile-20 results showed high levels of satisfaction in most domains. Statistical correlation between patients' expectations and satisfaction with new complete dentures was not proven. However, comparison between patient expectations and satisfaction showed positive results.

Conclusion

Patients' high expectations were met or even exceeded in certain domains. A statistical relationship between patient expectations and satisfaction was not demonstrated, but analysis yielded positive results without any association between the two variables.

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INTRODUCTION

The increase in life expectancy of the population combined with a modernized lifestyle and dietary habits such as an increase in sugar intake, contribute to the prevalence of edentulism amongst older citizens in developed countries.[1] The treatment of choice in most of these countries for complete edentulism is an implant-supported denture, which decreases the requests for complete removable dentures (CRD). The prevalence of complete edentulism in developing countries such as the Republic of South Africa (RSA) is also high but the local demand for rehabilitation is most often for the more cost effective CRD.[1-6] Oral health services provided at the public health clinics in RSA predominantly comprise dental extractions together with a limited range of preventative and restorative procedures.[3-4, 7-8] Consequently, an increase in both partial and complete edentulism is evident among those attending public health facilities.[8-9]

Within the RSA context, CRDs are considered to be the cheap treatment option and are available to those of the population who are able to seek treatment from private practitioners. For the underprivileged majority who attend public health clinics, however, this option or service has not been available, especially in the Western Cape Province of RSA where the demand is greatest.[7] CRD treatment for this cohort, comprising mostly pensioners and the unemployed, is available only at the academic dental institution, and here they would be treated largely by undergraduate dental students.

Whilst edentulism is not life threatening, it has a tremendous impact on the functional and social aspects of the oral health and quality of life of the individual. Therefore every effort should be pursued to understanding the complexities around this phenomenon. The consequences of tooth loss and complete edentulism are well documented and important aspects which have been reported are poor self-image, nutritional deficiencies and psychological effects.[9-11] Naturally, then, patients have certain expectations as regards these problems when treatment is in the offing.

Patient expectations regarding treatment with CRDs are not only dependent on their own past experiences but also on the information they have received from others, that is, both denture and non-denture wearers.[12-16] These expectations would likely influence the level of satisfaction experienced by patients with newly acquired CRDs, affecting the success of prosthetic treatment outcomes. In this regard, Suresh et al. conducted a study using a validated questionnaire which investigated four specific categories of expectation, namely mastication, aesthetics, phonetics and comfort.[17] Using an investigator-administered approach, the study concluded that pre-treatment expectations which were satisfied

contributed to successful outcomes but that the treatment failed if and when these expectations were disappointed.[17] Another study indicated that patients had high expectations regarding denture stability and fit, and that this was evident mostly amongst first time denture wearers.[18] Smith and Mc Cord specified that the expectations of edentulous patients were high regarding mastication, speech and aesthetics.[19] The importance of meeting expectations to ensure satisfaction with the completed treatment cannot be overemphasized; it thus forms a major part of treatment planning and execution and must be considered at all times.

Patient satisfaction with CRD treatment incorporates a series of aspects related to the dentist, to the patient and to the procedures involved:
a. Patient factors may include age, demographic features and denture-bearing anatomical areas, more specifically the residual ridge form.[20-24]
b. On the other hand, factors associated with the dentist or the dental student comprise the accuracy of clinical procedures such as jaw relations, the quality of the denture produced, and, very importantly, the experience of the clinician and the relationship established between dentist and patient.[20-26] Extensive reference has been made to the latter, where disparities in satisfaction as perceived by patients were reported when treated by students, either junior or senior.[27-29]
c. Specific factors that influence the levels of satisfaction with dentures have been reported in the literature and include psychosomatic characteristics of the patient, quality of the denture, comfort, speech, aesthetics, mastication, retention, fit/stability and occurrence of pain.[20-24, 30-31]

However, the link between patient satisfaction and quality of life is tenuous, for any complication or dissatisfaction can exert an influence. Thus, it is important that there is a clear understanding of what these concepts imply. Oral health-related quality of life (OHRQoL) is based on the influence the treatment has on the patient's perception of oral health, but more importantly on the impact of his/her daily life.[32,33] The concept of OHRQoL introduced by Gift and Redford was to ensure the inclusion of the social and psychological impacts of oral disease which determine the degree to which oral health influences the patient's life and social functioning.[32, 34] In line with this idea, specific patient satisfaction and OHRQoL instruments were developed to determine the impact of treatment procedures, such as the CRDs, on the daily life of the patient.[33] The use has become widespread of validated instruments in the clinical environment and for research, such as the oral health impact profile (OHIP), to investigate the influence of CRDs and other treatments on patient satisfaction and on OHRQoL.[23, 35-36] The OHIP is a subjective, validated and reliable tool and is consistent and sensitive to changes as regards the social impacts of oral conditions, even in its shortened version.[35-39]

Conducting studies focusing on patient-based outcomes have increased in Dentistry as these offer patients an opportunity to share opinions regarding the treatment rendered.[39] Patient satisfaction implies treatment success, and that expectations have indeed been met. Hence, using a patient-based approach to determine the factors which influence this important outcome may assist in improving the treatment.

Table 1: Patient Expectations Questionnaire

FL	1.	Do you expect to have difficulty chewing because of problems with your dentures?	Very often	Fairly Often	Occasionally	Hardly Ever	Never
FL	2	Do you expect to have food catching underneath your dentures?	Very Often	Fairly Often	Occasionally	Hardly Ever	Never
PD2	3	Do you expect to avoid eating some foods because of problems with your new dentures?	Very often	Fairly Often	Occasionally	Hardly Ever	Never
PD2	4	Do you expect your diet to change/ be unsatisfactory because of problems with your new dentures?	Very often	Fairly Often	Occasionally	Hardly Ever	Never
PD2	5	Do you expect that you will be unable to eat with your new dentures?	Very often	Fairly Often	Occasionally	Hardly Ever	Never
PD2	6	Do you expect to interrupt your meals because of problems with your new dentures?	Very often	Fairly Often	Occasionally	Hardly Ever	Never
PP	7	Do you expect pain in your mouth as a result of your new dentures?	Very often	Fairly Often	Occasionally	Hardly Ever	Never
PP	8	Do you expect to have sore spots/ ulcers in your mouth because of your dentures?	Very often	Fairly Often	Occasionally	Hardly Ever	Never
PP	9	Do you expect your new dentures to be uncomfortable? (if not applicable, please mark Never	Very often	Fairly Often	Occasionally	Hardly Ever	Never
PD1	10	Do you expect to be self-conscious because of problems with your dentures?	Very often	Fairly Often	Occasionally	Hardly Ever	Never
FL	11	Do you expect your dentures to fit retentively/ properly?	Very often	Fairly Often	Occasionally	Hardly Ever	Never
H	12	Do you expect your dentures to affect your Quality of Life?	Very often	Fairly Often	Occasionally	Hardly Ever	Never
H	13	Do you expect you will be satisfied with your new dentures?	Very often	Fairly Often	Occasionally	Hardly Ever	Never

KEY:
FL: Functional Limitation
PD2: Physical Disability
PP: Physical Pain
PD1: Psychological Discomfort
H: Handicap

Scale items	Component			
Table 2: Factor analysis	**Factor 1 Mastication**	**Factor 2 Pain**	**Factor 3 Adaptation**	**Factor 4 Discomfort**
Q1. Do you expect to have difficulty chewing because of problems with your dentures	**.668**			
Q2. Do you expect to have food catching underneath your dentures	**.732**			
Q3. Do you expect to avoid eating some foods because of problems with your new dentures	**.789**			.364
Q4. Do you expect your diet to change/be unsatisfactory because of problems with your new dentures	**.811**			
Q5. Do you expect that you will be unable to eat with your new dentures	**.755**			
Q6. Do you expect to interrupt your meals because of problems with your new dentures	**.750**			-.300
Q7. Do you expect to have pain in your mouth as a result of your new dentures		**.902**		
Q8. Do you expect to have sore spots/ulcers in your mouth because of your dentures		**.855**		.309
Q9. Do you expect your new dentures to be uncomfortable				.776
Q10. Do you expect to be self-conscious because of problems with your dentures				.344
Q11. Do you expect your dentures to NOT fit retentively/properly		**.454**	.434	
Q12. Do you expect your dentures to NOT affect your Quality of Life			.811	
Q13. Do you expect you will be NOT satisfied with your new dentures			.810	

Factor One : Mastication
Factor Two : Pain
Factor Three: Adaptation
Factor Four :Discomfort
(bold numbers indicate a conceptual strength between the two factors)

The aim of this study was to determine whether patients' expectations influence their satisfaction with new complete dentures prepared by undergraduate students. The following objectives were addressed:
1. Determining patient expectations prior to their receiving new complete dentures and,
2. Evaluating whether the expectations of patients influence their satisfaction with new complete dentures.

METHODS

For this observational study, a readily available group of 100 patients (a convenience sample) treated by undergraduate dental students was used. The patients were sourced from the existing waiting list created by staff of the Department of Prosthetics at the University of the Western Cape (UWC). Patients were initially screened by staff members for suitability to be treated by students. The screening process included a brief medical history, an oral examination including ridge assessment and a preliminary diagnosis to assess suitability for treatment by a student. Once patients were scheduled to be treated, a file with important demographic particulars (age, address and income category) was recorded. The principal researcher approached the edentulous patients to inform them of the study and to obtain their consent to participate. Students in their clinical years of study constructed the dentures under the supervision of qualified dentists.

Inclusion criteria specified that the patients required new dentures, had healthy mucosa and that they had had previous denture experience. Patients with any mucosal pathology, temporo-mandibular disease, psychological problems and first time denture-wearers were excluded.

Data collection included completion of two questionnaires which were marked with corresponding case numbers for easy correlation: the Patient Expectation Questionnaire (PEQ) (Table 1) and Oral Health Impact Profile-20 (OHIP-20) questionnaires. The PEQ was completed at the start of the first clinical visit, and the OHIP-20 three months after delivery of the CRDs. Responses to the questions were recorded using a 5-category Lickert scale: 1) never, 2) hardly ever, 3) occasionally, 4) fairly often and 5) very often, with a low score representing a better OHRQoL.

The PEQ was a new tool formulated by the principal researcher. The questions on this document were grouped according to the categories of questions on the OHIP-20 (Table 1). A series of statistical tests was completed to assess the validity and reliability of the PEQ. Reliability tests analyze the scale's internal consistency, which tests the degree to which this PEQ tool produced stable and consistent results. For this stage, the Cronbach's alpha was determined, where a result between 0.7- 0.8 indicates an acceptable ⍺ value. A factor analysis was also completed as a data reduction technique to summarize the items being loaded, which also removed redundancy or duplication from a set of correlated variables. The OHIP-20 is a previously validated questionnaire, not requiring reliability and validity tests.[35-39]

Data analysis included frequency calculations of demographic details and of the responses on the two questionnaires; the information was grouped to ascertain the distribution of variables amongst specified intervals and in order to make meaningful deductions. A Pearson correlation coefficient was computed to assess the linear relationship and the strength of this relationship between patient expectation and satisfaction with CRDs. Data collection and analysis were completed using Excel and SPSS software.

Table 3: Reliability Tests of PEQ questions on Mastication		
Factor 1- Mastication	**Corrected Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
Q1. Do you expect to have difficulty chewing because of problems with your dentures? (FL)	.616	.840
Q2. Do you expect to have food catching underneath your dentures?(FL)	.655	.830
Q3. Do you expect to avoid eating some foods because of problems with your new dentures? (PD2)	.708	.820
Q4. Do you expect your diet to change/be unsatisfactory because of problems with your new dentures? (PD2)	.710	.820
Q5. Do you expect that you will be unable to eat with your new dentures? (PD2)	.610	.838
Q6. Do you expect to interrupt your meals because of problems with your new dentures? (PD2)	.578	.844
KEY: FL: Functional Limitation PD2: Physical Disability		

Table 4: Reliability Tests of PEQ question on Pain		
Factor 2- PAIN	**Corrected Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
Q7. Do you expect to have pain in your mouth as a result of your new dentures? (PP)	.684	.315
Q8. Do you expect to have sore spots/ulcers in your mouth because of your dentures? (PP)	.668	.349
Q11. Do you expect your dentures to NOT fit retentively/properly?(FL)	.213	.887
KEY: FL: Functional Limitation PP: Physical Pain		

RESULTS

Ethical clearance was obtained from the UWC Ethics Committee (Registration Number: 13/7/16). All participants signed a consent form according to the Declaration of Helsinki.[41]

The majority of the sample was in the age category 56-65 years with 32% in the 65 years and older group, forming the second largest category. Females made up 72% of the sample. Eighty five percentage of the sample was Coloured, with Blacks, Whites and Indians completing the sample.

Testing the PEQ questions for reliability and validity produced a Cronbach's alpha of .773. This is an acceptable alpha value, confirming that the scale is very reliable.

1. A factor analysis, conducted as a data reduction technique, is presented in Table 2. The four factors were: - mastication, pain, adaptation and discomfort. For this process of validation, the analysis yielded a four factor solution with Eigen values (Table 2). Factors which have a high Eigen value should be included, while those with a low Eigen value should be removed. The common method is to include factors with Eigen value ≥ 1 and eliminate factors < 1. The total variance of the four factors was 64.4%.

2. Reliability for two of the identified factors (mastication and pain) was conceptually stronger (bold numbers in Table 2) than for the other two factors (adaptation and discomfort) which were thus disregarded in the subsequent analysis (Tables 3, 4).

3. Reliability tests were conducted on the two factors (mastication and pain) identified from the factor analysis. As evidenced by the internal consistency of the estimates of reliability, the scale was shown to be very reliable (Tables 3, 4).

It was determined that the reliability would also increase if the following questions were dropped:

Q10. Do you expect to be self-conscious because of problems with your dentures?
Q12. Do you expect your dentures to NOT affect your Quality of Life?

The reasons for inconsistency in answers to these questions could be a lack of understanding and interpretation of the statements.

Results for the PEQ indicated that patients' expectations were greatest in the following domains:
a. Questions relating to Functional Limitations (FL). The majority of the sample indicated that they did not expect to encounter difficulty with chewing or to have food catching under the new CRDs (Figure 1). Most patients (87%) also expected well- fitting CRDs (Figure 2).
b. Questions relating to Physical Pain (PP). About half of the sample expected to experience pain as a result of the new CRDs (PEQ results) but this was not evident in relation to the satisfaction scores (OHIP-20 results) for this factor (Figure 3). More than two thirds (64%) of the sample felt that their new CRDs would never be uncomfortable.
c. Questions relating to Physical Disability (PD 2). Sixty-six percent of patients indicated that they would never avoid certain foods nor feel that their diet would be unsatisfactory because of the CRDs. Patients indicated an expectation of not experiencing problems with eating or having their meals interrupted due to problems with the new CRDs.

Similarly, OHIP-20 results indicated that patients were mostly satisfied with their newly acquired CRDs:
a. Questions related to Functional Limitations (FL)

b. Thirty seven percent of patients never encountered difficulty chewing, whereas 32.2% experienced food catching underneath their new CRDs (Figure 1). Almost half of the sample (43.4%) felt their CRDs were not fitting properly (Figure 2).
Forty percent of patients had pain due to the new CRDs whilst 38% did not find it uncomfortable to eat certain foods (Figure 3). However, 35.6% had sore spots in their mouth and 33.3% indicated some discomfort with their new CRDs.

c. Questions related to Physical Disability (PD2)
Approximately equal numbers of patients (51.1%) said they never avoided eating some foods or felt their diet was unsatisfactory because of problems with the CRDs. A third of the participants (31.1%) felt they were unable to eat with their CFD's whilst 28.9% had to interrupt meals because of problems with their CRDs.

d. Questions related to Psychological Disability (PD3)
Two thirds of the sample felt they were never upset or embarrassed because of problems with their CRDs.

e. Questions related to Social Disability (SD)
A majority of the sample (82.2%) never avoided going out because of problems with their CRDs and 83.3% were never intolerant with their spouse and family. A very small percentage (8%) of the sample felt irritable because of problems with their CRDs.
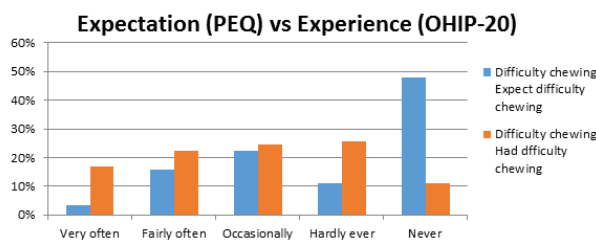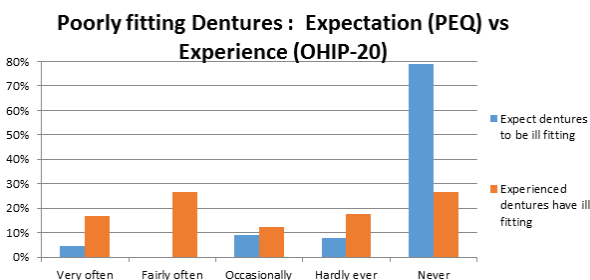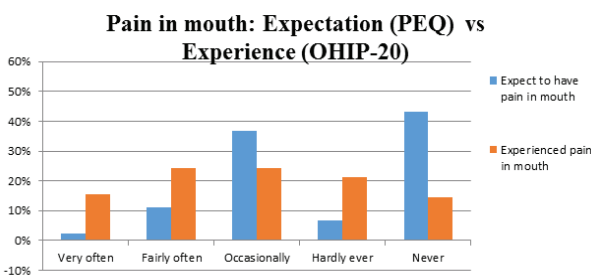

Figure 1

Figure 2

Figure 3

Correlation between responses of the PEQ and OHIP-20
A Pearson correlation coefficient was computed to assess the relationship between patient expectation and satisfaction with the newly acquired CRDs. A Pearson correlation of r=+.70 indicates a positive relationship between variables. However, for this study, the correlation was calculated to be r=+.11.   This indicates that there was in fact no statistically significant correlation between the two variables of Patient Expectation and Patient Satisfaction with new CRDs.

Patients expected not to encounter any difficulties whilst eating with their new CRDs or with food catching underneath their new CRDs (Figure 1). However, many were not satisfied with functional

performance for a third complained of food lodging beneath their dentures. The majority had not had any expectation of improper denture fit, yet almost half felt that their new CRDs were not sitting properly over the denture-bearing areas (Figure 2).

More than half of the patients expected to experience some pain with the new CRDs and surprisingly, only a third recorded they had actually felt pain (Figure 3). Also, more than two-thirds of the patients never expected the CRDs to sit comfortably, yet only a third had complaints related to comfortable fit and reported that discomfort was experienced only whilst eating certain foods. Patients' expectations regarding having problems with eating or having their meals interrupted due to problems with the new CRDs were mostly positive. The satisfaction scores were mostly aligned to this expectation as less than a third complained of inability to eat or having their meals interrupted due to problems with the new CRDs.

DISCUSSION
The null hypothesis of this study was that the expectations of patients do not influence their overall satisfaction with their complete dentures, which had been constructed by undergraduate dental students. This hypothesis was accepted following the interpretation of the Pearson correlation analysis that showed there was no significant statistical correlation between the two variables namely expectation and satisfaction. The analysis of the frequency distributions of both questionnaires supported this finding with high levels of expectation and satisfaction noted in all domains.

The majority of the sample were aged 56 years and older with a third being over 65 years, similar to the reports of comparable surveys found in the literature.[8-9] Females made up the largest gender component in the study. This follows the trend that females lose their teeth earlier and hence can become edentulous before their male counterparts.[41-43] Patients of coloured ethnicity formed the largest part of the sample. This is supported by studies that found the coloured community has a higher prevalence of edentulism amongst population groups in the Western Cape Province of RSA.[2, 8] This disparity in edentulism amongst ethnicity can be attributed to factors specific to the coloured community.[2] Secondary education was achieved by most of the participants. Studies have shown that levels of education play a fundamental role in the rate individuals become edentulous.[30, 42,-44]

Reliability tests for the PEQ using Cronbach's Alpha were required in order to validate the questionnaire. Once the reliability was ascertained, factor analysis was completed on the results of the questionnaire. These factors were related to mastication and pain and cover the functional limitations and physical disability domains. This result resonates with the study conducted by Smith et al, (2004) which concluded that edentulous patients have expectations regarding aesthetics, comfort, speech and mastication.[19] When analyzing the OHIP-20, high levels of satisfaction were recorded in most of the domains of the questionnaire. The most important factors reported by other studies that influence satisfaction are perceived pain, retention of the CDs, aesthetics, function and speech.[20-26] These were also identified for this current study.

Conclusion
Analysis of the questionnaires indicated that the high initial levels of expectations were met in most domains, so that even though a statistical relationship between patient expectations and satisfaction was not proven, analysis of the questionnaires produced positive results.

Implications for Practice
Due to the high prevalence of complete edentulousness amongst the underprivileged community of the Western Cape Province of SA, there is still a great demand for CRDs in this part of the world. Unfortunately, the service is obtainable only at dental teaching institutions because the public health clinics do not provide such treatment options. As the expectations of the patients did not negatively influence denture satisfaction, the effort on improvement should focus on the continual upgrading of teaching as well as on the effective delivery of RCDs.

References

1. Cooper LF. The current and future treatment of edentulism. J Prosthodont 2009; 18: 116-22.
2. Friedling J, Morris AG. Pulling teeth for fashion: Dental modifications in modern day Cape Town, South Africa. SADJ 2007; 62: 106-13.
3. Naidoo S, Chikte U, Moola H, Steyn K. Perceptions of oral health: The South African Demographic and Health Survey of 1998. SADJ 2001; 56: 505-10.
4. Thorpe S. Oral health issues in the African region: Current situation and future perspectives. J Dent Educ 2006; 70: 8-15.
5. Reisine ST, Psoter W. Socioeconomic status and selected behavioral determinants as risk factors for dental caries. J Dent Educ 2001; 65:1009-16.
6. Douglass CW, Sheets CG. Patients expectations for oral health care in the 21st century. J Prosthet Dent 2000; 131:3S-7S.
7. Reid S. Community service for health professionals. SA Health Review Sabinet 2002; 135-59.
8. Van Wyk PJ, Van Wyk C. Oral health in South Africa. Int Dent J 2004; 54:373-7.
9. Emami E, de Souza RF, Kabawat M, Feine JS. The impact of edentulism on oral and general health. Int J Dent 2013. http://dx.doi.org/10.1155/2013/498305.
10. Carlsson G.E. Critical review of some dogmas in prosthodontics. J Prosth Res 2009; 53: 3-10.
11. Polzer I, Schimmel M, Muller F, Biffar R. Edentulism as part of the general health problems of elderly adults. Int Dent J 2010; 60: 143-55.
12. Miranda BB, dos Santos MBF, Marchini L. Patients' perception of benefits and risks of complete denture therapy. American College of Prosthodontists. 2014; 23: 515-20.
13. Divaris K, Ntounis A, Marinis A, Polyzois G, Polychronopoulou A. Loss of natural dentition: multi- level effects among a geriatric population. Gerodont 2012; 29(2) E192-99.
14. Marachilioglou CRMZ, Dos Santos JFF, Cunha VPP, Machini. L. Expectation and final evaluation of complete dentures by patients, dentist and dental technician. J Oral Rehabil 2010; 37: 518-24.
15. De Souza e Silva ME, de Magalhaes CS, e Ferreira EF. Gerodont 2009; 26:143-9.
16. Felton DA. Edentulism and co-morbid factors. J Prosthodont 2009; 18: 88-96.
17. Suresh S, Sharma S. A clinical survey to determine the awareness and preference of needs of a complete denture among complete edentulous patients. J Int Oral Health. 2010; 2: 65-70.
18. Al- Mendilawi LRB, Al-Towayer AH. Pre-treatment denture patient expectations in a university clinic. J Baghdad College Dent 2006; 18(1): 33-7.
19. Smith PW, McCord JF. What do patients expect from complete dentures? J Dent 2004; 32: 3-7.
20. Viola AP, Takamiya AS, Monteiro DR, Barbosa DB. Oral health- related quality of life and satisfaction before and after treatment with complete dentures in a dental school in Brazil. J Prosthod Res 2013; 57: 36-41.
21. Reissmann DR, Schierz O, Szentpetery, John MT. Improved perceived general health is observed with prosthodontic treatment. J Dent 2011; 39: 326-31.
22. Critchlow SB, Ellis JS. Prognostic indicators for conventional complete denture therapy: A review of the literature. J Dent 2010; 38: 2-9.
23. Adam RZ, Geerts GAVM, Lalloo R. The impact of new complete dentures on oral health –related quality of life. SADJ 2007; 62: 264-8.
24. Allen PF, McMillan AS. A review of the functional and psychosocial outcomes of edentulousness treated with complete replacement dentures. J Can Dental Ass 2003: 69: 662-662e.
25. Douglass CW, Shih A, Ostry L. Will there be a need for complete dentures in the United States in 2020? J Prosthet Dent 2002; 87: 5-8.
26. McGrath C, Bedi R. Can dentures improve the quality of life of those who have experienced considerable tooth loss? J Dent 2001; 29: 243-6.
27. Kimoto S, Kimoto K, Kitamura, Saita M, Iljima M, Kawai Y. Effect of dentist's clinical experience on treatment satisfaction of a complete denture. J Oral Rehabil 2013; 40: 940-7.
28. Sachdeo A, Konfino S, Icyda U.R, Finkelman MD, Gulati H, Arsenault P, et al. An analysis of patient grievances in a dental school clinical environment. J Dent Educ 2012; 76: 1317-22.
29. Wieder M, Faigenblum M, Eder A, Louca C. An investigation of complete dentures teaching in the UK: Part 1. A survey of undergraduate teaching. BDJ 2013; 215: 177-81.
30. Turker SB, Sener ID, Ozkan YK. Satisfaction of complete denture wearers related to various factors. Archives Geront Geriat 2009; 49: e126-9.
31. Berg E. Two year follow-up study of patient satisfaction with new complete dentures. J Dent 1988; 16: 160-5.
32. Michaud PL, de Grandmont P, Feine JC, Emami E. Measuring patient-based outcomes: Is treatment satisfaction associated with oral health –related quality of life? J Dent 2012; 40: 624-31.
33. John MT, Reibmann DR, Szenrpetery A, Steele J. An approach to define clinical significance in prosthodontics. J Prosthodont 2009; 18: 455-60.
34. AlBaker AM. The oral health related quality of life in edentulous patients treated with conventional complete dentures. Gerodont 2013; 30: 61-6.
35. Al- Omiri MK, Karasneh J. Relationship between oral health quality of life, satisfaction, and personality in patients with prosthetic rehabilitations. J Prosthodont 2010; 19: 2-9.
36. Slade GD. Derivation and validation of a short form oral health impact profile. Comm Dent Oral Epidemiol 1997; 25: 284-90.
37. Slade GD, Spencer A.J. Development and evaluation of the oral health impact profile. Comm Dent Health. 1994;11: 3-11
38. Montero J, Macedo C, Valverde AL, Bravo M. Validation of the oral health impact profile (OHIP-20) for Spanish edentulous patients. Med Oral Pat Oral Cur Bucal. 2012; 17 (3): e 469-76.
39. Allen F, Locker D. A modified short version of the Oral Health Impact Profile for assessing Health Related Quality of Life in edentulous adults. Int J Prosthodont. 2002;15(5):446-50.
40. Ellis JS, Pelekis ND, Thomason J.M. Conventional rehabilitation of edentulous patients: The impact on oral health- related quality of life and patient satisfaction. J Prosthodont 2007; 16: 37-42.
41. World Medical Organization. Declaration of Helsinki. Br Med J 1996; 313:1448-9.
42. Celebic A, Dubravka Knezovic-Zlataric. Factors related to patient satisfaction with complete denture therapy. J Gerontol 2003; 58: 948-53.
43. Kovac Z, Troskot Z, Uhac I, Cabov T, Lajnert V, Pavicic DL, Zore IF, Tariba P. Multivariate analysis of different factors affecting the patient general satisfaction with complete dentures. Coll Antropol 2012; 36: 791-4.
44. Pan S, Awad M, Thomason JM, Dufresne E, Kobayashi T, Kimoto S, et al. Sex differences in denture satisfaction. J Dent 2008; 36: 301-8.