
Evaluation of the educational level and its influence on the success rate of complete denture

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Abstract: Except for denture quality, many other factors are related to a patient's satisfaction with complete dentures (CDS). Complete denture construction provides dentures that have a pleasing appearance, maintain normal speech, provide occlusal support and supply adequate means for the mastication of food. In addition to this dentures should be comfortable and contribute to the continuing health of the supporting tissues. The aim of the study was to find if and how the educational level of the patient influenced the success rate of complete denture delivered in Saveetha Dental College. A survey was conducted among 119 patients who had received complete dentures from Saveetha Dental College Questionnaire on the educational level and the quality of their denture was asked. The data was retrieved from 86,000 patients among which 119 complete denture patients were selected. The results were tabulated, Descriptive statistics, cross tabulation and chi-square test was done by SPSS IBM software 20.0 The most common educational qualification of the patient was higher (33%). It was found that a better satisfactory level was found in high educational qualification patients $p > 0.001$. Level of education, self perception of affectivity are all related to patient satisfaction. Within the limits of the study it was found that patients with higher educational level had more satisfaction of the denture than the patients with low educational qualification.

Keywords: complete denture; educational level; success rate; mastication, colour of the denture

INTRODUCTION

The aim of complete denture construction is to provide dentures that have a pleasing appearance, maintain normal speech, provide occlusal support and supply adequate means for the mastication of food. In addition to this, dentures should be comfortable and contribute to the continuing health of the supporting tissues. [(The British Society for the Study of Prosthetic Dentistry—Founded in 1953, 2000)] The majority of patients express satisfaction with complete dentures that are well designed and constructed yet there are a group of patients who remain dissatisfied in spite of the clinical perfection of their prostheses. [(Langer, Michman and Seifert, 1961)] Complaints in complete denture commonly relate to pain, pressure, looseness, poor function and appearance. [(Yoshizumi, 1964)] There are some patients who will find difficulty coping with well designed dentures because of anatomical features such as grossly resorbed residual ridges, proximity of the neurovascular bundle or physical factors contributing to a lack of muscular control, whilst others with similar circumstances seem to manage well. [(Berg and Johnsen, 1986)]

In most societies worldwide, the need for complete denture is not likely to decrease despite a downward trend in education. Although implant retained overdentures may be considered the best option for the oral rehabilitation of edentulous individuals, conventional complete dentures fabrication will remain an important part of oral health care for the growing elderly population due to economic reasons. [(Carlsson, 2006)] [(Ariga *et al.*, 2018)] The delayed start of the preventive public programs for oral health combined with the population aging led to a large number of edentulous people. [(Carlsson and Omar, 2010)] [(Jyothi *et al.*, 2017)] Patient perceptions are fundamental for improving health and quality, so methods for assessing patient feedback on satisfaction, care, experience and treatment outcomes are very important. [(Carlsson and Omar, 2010; Marchini *et al.*, 2012)] [(Duraishamy, Krishnan, Ramasubramanian, Sampathkumar, Mariappan and Sivaprakasam, 2019)] The same holds true for complete dentures therapy. Patient's satisfaction with their complete dentures may be

considered the ultimate goal of the therapy [(Foeller, 2000)][(Selvan and Ganapathy, 2016)] as it was strongly associated with oral health - related quality of life.

Patient satisfaction with complete denture seems to be a complete socio-cultural issue related to numerous factors. [(Ganapathy, 2016)][(Ashok *et al.*, 2014)]. Patient's evaluations of their prostheses sometimes neither co-relate with clinician's assessments nor with anatomic factors [(Awad and Feine, 1998)][(Subasree, Murthykumar and Dhanraj, 2016)] Evaluation of patient's acceptance and satisfaction with their complete denture therapy is limited by the various methods used in collecting and rating all the influential factors. [(Yamaga, Sato and Minakuchi, 2013)][(Jain, Ranganathan and Ganapathy, 2017)] According to previous studies [(van Waas, 1990)][(Vijayalakshmi and Ganapathy, 2016)] many factors are used in assessing the patient satisfaction with complete denture therapy such as self -evaluation of the state or quality of life, level of education, level of income and anatomic factors. [(Kelly, 1972)][(Ganapathy, Kannan and Venugopalan, 2017)] Based on the publications on satisfaction with complete dentures [(Venugopalan *et al.*, 2014)] it was shown that patients usually present high satisfaction levels, but there was a small number of patients that are unable to adapt due to lack of perception, knowledge and low educational levels [(Kelly, 1972; Wu *et al.*, 2012)][(Ashok and Suvitha, 2016)]. Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade (Deogade, Gupta and Ariga, 2018; Ezhilarasan, 2018; Ezhilarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; J *et al.*, 2018; Menon *et al.*, 2018; Prabakar *et al.*, 2018; Rajeshkumar *et al.*, 2018, 2019; Vishnu Prasad *et al.*, 2018; Wahab *et al.*, 2018; Dua *et al.*, 2019; Duraisamy, Krishnan, Ramasubramanian, Sampathkumar, Mariappan and Navarasampatti Sivaprakasam, 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Gheena and Ezhilarasan, 2019; Malli Sureshbabu *et al.*, 2019; Mehta *et al.*, 2019; Panchal, Jeevanandan and Subramanian, 2019; Rajendran *et al.*, 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Sharma *et al.*, 2019; Varghese, Ramesh and Veeraiyan, 2019; Gomathi *et al.*, 2020; Samuel, Acharya and Rao, 2020)

The ultimate goal of the study was to evaluate the success rate of the complete denture based on patients perception and educational qualification.

MATERIALS AND METHODS

The study population consisted of 119 patients who had complete denture prosthesis fabricated in Saveetha Dental College. A questionnaire (Given below) with the patient's educational level and their perception towards the denture was developed. Ethical clearance for this study was obtained from the institutional ethical board.

The data were retrieved from 86,000 patients' records among which 119 patients were selected based on the inclusion criteria. Phone calls were made to the patient and the questions were asked. 3 reviewers were involved in the study. The data included in the study were from June 01, 2019 to March 31, 2020. Simple random sampling, collecting more data sources and including the data from the institute were the measures taken to minimise bias.

Patients were categorised based on the educational level as follows: [(Celebic *et al.*, 2003)]

Primary: Kindergarten to 5th standard

Secondary: 6th standard to 10th standard

High school: 11th and 12th standard

Bachelor's: Undergraduate

Master's: Postgraduate

Inclusion Criteria :

The patients who received complete denture prosthesis earlier and experienced users from Saveetha Dental College.

Exclusion Criteria :

- Patients with implant supported complete denture
- Patients with removable partial denture prostheses.
- Patients with implants supported partial denture.

The data were entered and analysed using IBM SPSS software (20.0). Descriptive statistics were calculated to explore the features of the data. A cross tabulation analysis was conducted to examine the categorical variables. Chi-square test was used to identify any significance between the variables.

Questionnaire:

1. Educational Qualifications ?
2. Does your denture fall during eating ?
3. Are you satisfied with the chewing ability ?
4. Are you satisfied with the colour of the denture ?

5. Does your denture cause any trauma ?
6. Are you satisfied with the size of the teeth ?

RESULTS AND DISCUSSION

In our study, 119 patients who had complete dentures were included. The educational qualifications of the patients were Bachelors (12.6%), Highers (33.6%), Masters (5%), Primary (28.5%) and Secondary (20%). The most common educational qualification of the patients was higher school (40%). [Figure 1]

The answers for the question about masticatory functions were moderate (44.5%), good(41.2%) and poor(14.3%). It was found that most of the respondents had moderate masticatory function.(44.2%) [Figure 2]

The answers for the question about the chewing ability were moderate (41.1%), good(46.0%), poor (12.6%). The most common answer from the respondents was that they had a good chewing ability. (46.0%) [Figure 3]

The answers about the perception of colour of the denture were moderate (38.6%), good (47.0%), poor (14.3%) The most common answer from the respondents was good (47%). [Figure 4]

The answers about the trauma caused by the denture were moderate (39.5%), good (47.0%) and poor (13.4%). The most common answer from the respondents was good (47%) [Figure 5]

The results about the size of the teeth were moderate (45.4%), good (37.0%) and poor (17.6%) The most common answer from the respondents was moderate (45.4%) [Figure 6]

The overall satisfaction of the patients were moderate (44.5%), good (42.0%) and poor (13.4%) Most of the patients had moderate satisfaction (44.5%) [Figure 7]

High success rate was seen in the patients with higher education (26%) followed by secondary education(18.4%) followed by primary education (13.4%) followed by bachelors (12.5%) and followed by masters(5%). It was found that the patients with higher education had better satisfactory levels. There was significant association between the education level and the success rate of the complete denture ($p<0.05$). [Table 1 and Figure 8]

Ever since edentulism has become a legendary tradition of older age, the need for prosthetic rehabilitation is always in demand. It is extremely imperative for a dentist to consider his patient's priorities with regards to denture fabrication.

The most common educational qualification was high school (Figure 1). Fall of the denture during eating was less common. Patients were moderately satisfied with the chewing ability. Almost half of the patients were highly satisfied with the colour of the denture. The Patient's denture did not cause any trauma. There was a positive correlation between the educational level and satisfactory level of the patient.(Figure 8)

Educational level

In the study conducted by Celebic et al [(Celebic *et al.*, 2003)] the largest percentage of the patients had a medium level of education- primary school

Mastication and Chewing

According to Jonkman et al [(Jonkman, Waas and Kalk, 1995)] patients with better perception had better chewing capacity and chewing comfort zones. [(Kannan and Venugopalan, 2018)]

To achieve successful treatment, it is vital to consider a number of issues throughout the denture process. Before treatment even begins, the patient's motivation for denture treatment and emotional attitude towards dentures must be evaluated. Patients will thereby gain realistic expectations of what can and cannot be achieved, and dentists will understand what the patient really wants. Afterwards, the dentist must work with the patient to help achieve success in difficult areas such as neuromuscular control, mastication and speech. [(Roessler, 2003)]

Appearance of the Denture

Fenson MR et al [(Fenlon, Sherriff and Newton, 2007)] stated that educated people were more able to accept the appearance of the denture. [(Basha, Ganapathy and Venugopalan, 2018)]

Based on the study conducted by Turker et al [(Turker, Sener and Özkan, 2009)] patients with a low level of education were significantly more satisfied in general and were more satisfied with the aesthetics of their dentures, speech, and comfort of wearing maxillary dentures than patients with a higher level of education. This is probably due to the fact that less-educated patients have a lower level of expectations

Comfort of the Denture

In contrast to the present study Celebic A et al [(Celebic *et al.*, 2003)] [(Ajay *et al.*, 2017)] stated that there was no correlation between educational level and patient satisfaction of the denture and also said that education was just a conjugation and not the main factor. [(Quran *et al.*, 2001)] [(Reeve *et al.*, 1982)]

Other studies have evaluated different psychological factors such as the relationship between high self-image and acceptance of dentures and have shown a significant relationship. [(Silverman *et al.*, 1976)] Most studies

evaluating the relationship between psychological factors and the acceptance of complete dentures have shown a relationship

Patients who were uneducated were not satisfied with their speech with dentures. This shows that educated patients had learned phonetics and speech throughout their schooling as compared to uneducated patients. Therefore, educated patients were able to pronounce alphabets properly. [(Shirani, Mosharraf and Shirany, 2014)]

A patient's satisfaction is almost synonymous to his/her ability to adapt to dentures. Patients generally expect their dentures to cause them no pain, let them talk, chew, and look good. However, the patients also are typically prepared to accept the limitations, since those limitations are explained to them and all procedures are meant to assist them in adapting. This is the reason the dentist's attitude helps a lot in the adaptive process. Achieving a trusting relationship in the very beginning of patient care by explaining the limitations and possibilities of denture treatment helps patients to fit their expectations to a realistic level. During the treatment, having a dentist show patience and acceptance of the patient's claims, rather than labeling him as a difficult patient, helps with the adaptation process and seems to be key in achieving higher satisfaction rates. [(Silva *et al.*, 2014)]

The limitations of the study were less sample size, geographical location, ethnicity. More factors that influence the success rate of the study can be included in future studies. More technical advice and psychological support can be given to the uneducated for their better perception. Our institution is passionate about high quality evidence based research and has excelled in various fields ((Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Mathew *et al.*, 2020)

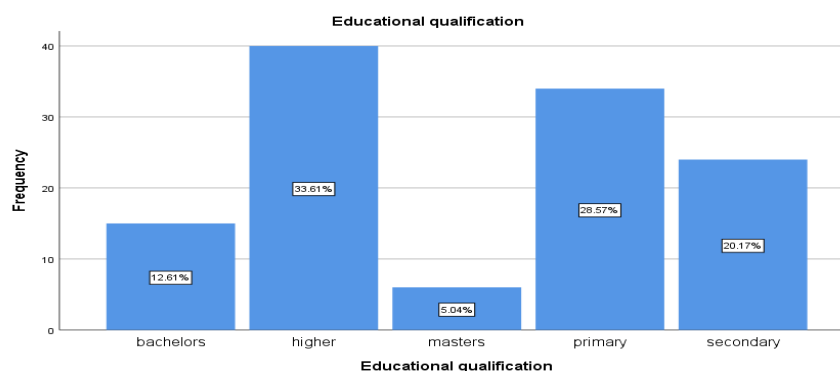


Fig.1: This graph shows the educational qualification of the complete denture patients visiting saveetha dental college. The X axis denotes the educational qualification of the patients and Y axis denotes the number of patients in each educational qualification. It was found that most of the patients' educational qualification was higher education. (33.6%)

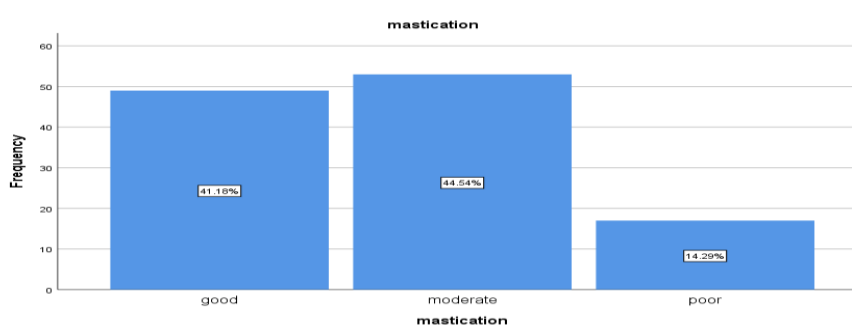


Fig.2: This bar chart shows the answer for the question: Does your denture fall during eating. The X axis denotes the satisfactory levels regarding the question fall off denture during eating and Y axis denotes the number of individuals who have answered the question. It was found that most common answer was moderate(44.5%)

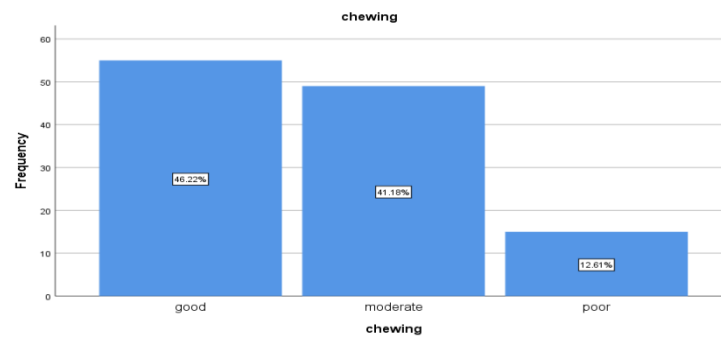


Fig.3: This bar chart shows the answer for the question :Are you satisfied with the chewing ability? The X axis denotes the satisfactory levels for the question regarding the chewing ability and Y axis denotes the number of individuals who have answered the question. It was found that the most common answer was good(46.2%)

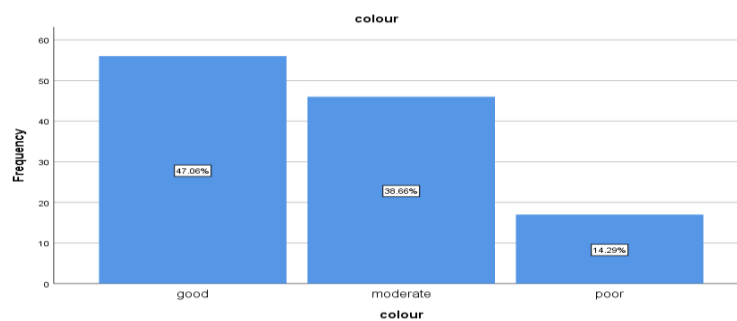


Fig.4: This bar chart shows the answer for the question: Are you satisfied with the colour of the denture? The X axis denotes the satisfactory levels for the question regarding the color of the denture and Y axis denotes the number of individuals who have answered the question. It was found that the most common answer was good(47%)

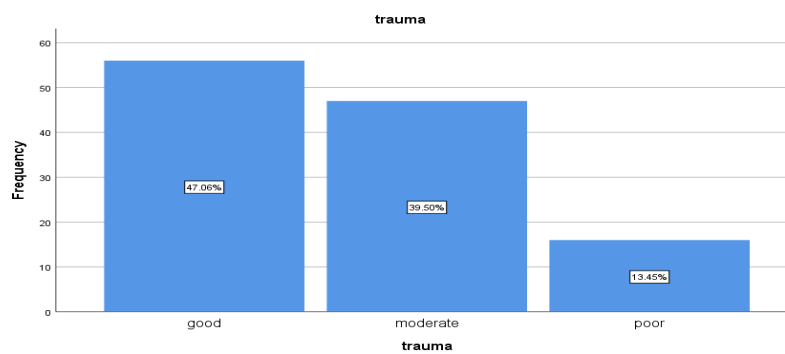


Fig.5: This bar chart shows the answer for the question: Does your denture cause any trauma?The X axis denotes the satisfactory level for the question regarding the trauma caused by the denture and Y axis denotes the number of individuals who have answered the question. It was found that the most common answer was good(47%)

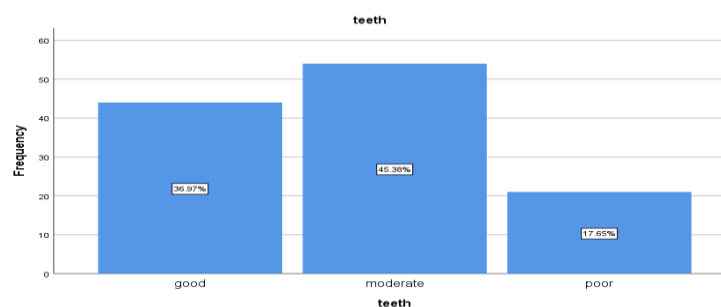


Fig.6: This bar chart shows the answer for the question: Are you satisfied with the size of the teeth. The X axis denotes the satisfactory levels for the question regarding the size of the teeth and Y axis denotes the number of individuals who have answered the question. It was found that the most common answer was moderate (45%)

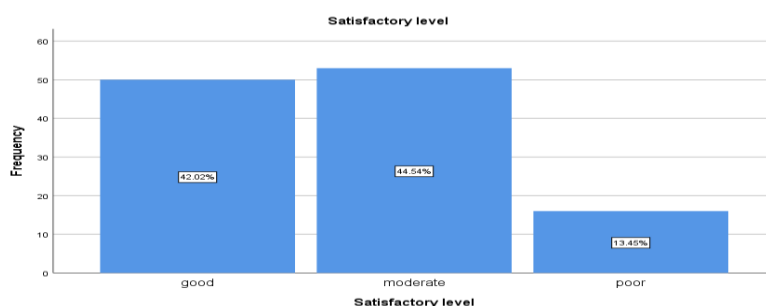


Fig.7: This bar chart shows the frequency of the satisfactory level. The X axis denotes the satisfactory levels for the question regarding the overall satisfactory level and Y axis denotes the number of individuals who have answered the question. It was found that the most common answer was (44.5%)

Table 1: This table shows the association between educational qualification and satisfactory level. It was found that the patients with higher educational levels had better success rate of the complete denture. Chi square test was done to calculate the p value(<0.01)

Educational qualification	Satisfactory level			Total	Chi Square Test p value
	good	moderate	poor		
bachelors	12	3	0	15	Pearson chi square value= 13.841 p=0.002
higher	13	19	8	40	
masters	3	3	0	6	
primary	12	16	6	34	
secondary	10	12	2	24	
Total	50	53	16	119	

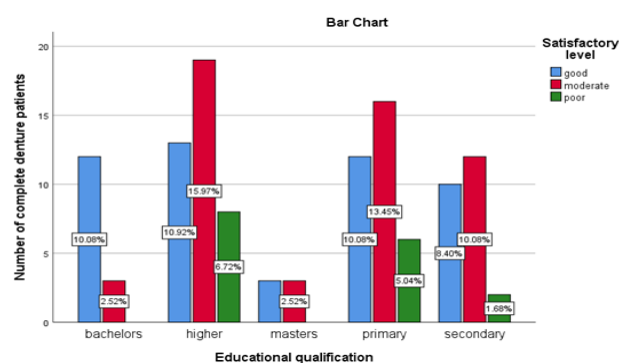


Fig.8: Bar chart shows the association between educational qualification and satisfactory level of the patient. The X axis denotes the educational qualification of the patients and Y axis denotes the number of complete denture patients with overall satisfaction level (Pearson chi square=13.841, p value=0.002 (p<0.05, hence statistically significant) It was seen that the patients with higher education (26%) had better satisfactory levels and the results were statistically significant(p<0.05)

CONCLUSION

Level of education, self perception of affectivity are all related to patient satisfaction. Within the limits of the study a positive correlation was found between educational level and satisfactory level of the patient.

AUTHORS CONTRIBUTIONS

First author (Keerthana. R) performed the analysis, and interpretation and wrote the manuscript. Second author (Dr.Revathi Duraiswamy) contributed to conception, data design, analysis, interpretation and critically revised

the manuscript. Third author(Dr.Manjari Chaudhary) participated in the study and revised the manuscript. All the three authors have discussed the results and contributed to the final manuscript.

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Conflict of interest

The authors declare that there is no conflict of interest.

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