Factors affecting patient satisfaction among patients undergone removable prosthodontic rehabilitation

Kumari Kavita¹, Md Asad Iqubal², Rohit Singh³, Supriya Singh², Jazib Nazeer⁴, Revati Singh⁵

¹Department of Dentistry, NMCH, Patna Dental College and Hospital, ²Oral Medicine and Radiology, ³Prosthodontics Crown Bridge and Implantology, ⁴Oral Pathology and Microbiology, Patna Dental College and Hospital, Patna, Bihar, ⁵Department of Dentistry, Patna Medical College and Hospital, Patna, Bihar, India

ABSTRACT

Background: Patient’s satisfaction is of utmost importance to the dental professionals among all those who have undergone prosthodontic rehabilitation. The success of every dental prosthesis lies in the patient wearing those removable prostheses thereby restoring masticatory function and Phonatics, hence the aim of the present study is to determine various factors affecting the patient satisfaction among patients undergone removable Prosthodontic rehabilitation. Materials and Methods: The present study is a cross-sectional questionnaire descriptive study. The study is conducted among 183 patients undergone removable Prosthodontic rehabilitation and visiting private dental clinics for follow-up. The study was conducted in October to December 2019. The study was conducted among patients age between 21 and 60 years of age wearing removable prosthesis. Results: Among all study participants, majority of study participants were moderately satisfied with the Retention (79 (43.16%)), Esthetics (87 (47.54%)), Mastication (68 (37.15%)), Finish of the denture (89 (48.63%)), and Overall satisfaction for maxillary and mandibular dentures (93 (50.81%)). Patient’s behavior was significantly associated with overall patient satisfaction (P = 0.00*). Conclusion: Factors affecting any parameter of patient satisfaction was age, Gender, Smoking habits, duration of wearing prosthesis, no. of removal prosthesis used, number of times denture was repaired, patient behavior was significantly associated with overall patient satisfaction.

Keywords: Denture, rehabilitation, patient satisfaction, prosthodontic

Introduction

Rehabilitation in the form of removable prosthesis is mainly concerned with replacing the teeth and soft tissues with a non-permanent corrective measure which are removable. These are usually called prosthesis, and might replace a full arch of teeth and are known as complete dentures, or partially replaced edentulous areas classified as partial dentures.[1]

Address for correspondence: Dr. Md Asad Iqubal, Lecturer, Department of Oral Medicine and Radiology, Patna Dental College and Hospital, Patna, Bihar, India. E-mail: md.asadiqubal@gmail.com

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The lost tooth might be replaced by varied sorts of removable choices reckoning on the condition of patient oral tissues, abutment tooth that support the prosthesis, bone density and patient fiscal condition, based on these factors acceptable levels of prosthesis can be delivered to the needy.\textsuperscript{6,7}

Advancements in corrective fabrication and techniques are improved over the years, but very little attention has been paid towards the psychological impact on the patient who received these prostheses. Psychological factors could play a significant role, and conjointly offer valuable information on the prediction of satisfactory outcome of prosthodontic treatment. Many different factors like improved chewing efficiency and improved phonatics conjointly contribute to the final word of success to the treatment.\textsuperscript{8}

In addition, rehabilitation of the masticatory system, the foremost fundamental issue for the success of replacement or denture treatment is patient satisfaction that is thought to be one in all the foremost troublesome tasks for the dental professional to attain.\textsuperscript{9}

Various studies,\textsuperscript{5,10,11} in the past were done to explore certain factors related to patient satisfaction seeking removable rehabilitation in numerous countries with relatively less number of studies conducted in Asian countries specially India wherever level of satisfaction from removable prosthesis was incredibly low.\textsuperscript{12} Hence, the aim of the current study is to see varied factors affecting the patient satisfaction among the patients undergone removable dentistry rehabilitation.

**Materials and Methods**

The present study is a cross-sectional questionnaire descriptive study. The study was conducted among 183 patients undergone removable Prosthodontic rehabilitation and visiting private dental clinics for follow-up. The study was conducted in October to December 2019. The ethical clearance was obtained from the institutional ethical committee on 18/09/2019.

The study was conducted among patients age between 21 and 60 years of age wearing removable prosthesis. Informed consent was obtained from the patients before the interview.

In total 30 clinics were selected randomly from the city of Patna and permission from the owner of the clinic was availed and patient appointment chart was obtained to determine the day of appointment of patient follow-up with removable denture. Those patients with minimum of 6 months of denture wear were included in the study. The study was continued for 3 months. A total of 183 patients were interviewed.

A pilot survey was conducted, before the main survey on some of the total study participants to test the validity and reliability of questionnaire. Internal consistency and reliability of questionnaires was measured by applying Cronbach’s-Alpha (\(\alpha\)) and test–retest. The value obtained was \(\alpha = 0.81\), Kappa (k) = 0.73 Weighted Kappa (\(k_w\)) = 0.78. Those questions with less validity and reliability were removed.

**Tools and technique of the study**

Questionnaire for the study consists of 4 parts. First part consists of demographic details of study participants. Second part consists of Prosthodontic history consists of questions regarding type and duration of wear of prosthesis, no. of removal prosthesis used till now, period of edentulousness before first prosthesis, denture given by type of dentists, times the denture had been repaired, during survey behavior of patient was classified using M.M. House mental classification.\textsuperscript{12,13} Third part consists of questions regarding patient satisfaction with removable prosthesis. Patient Satisfaction was assessed by using parameters like (i) Retention, (ii) aesthetics, (iii) speech, (iv) mastication, (v) finish of the denture, and (vi) overall satisfaction for maxillary and mandibular dentures. Overall Patients response was measured using 3 point satisfaction. 1 poorly satisfied, 2 moderately satisfied, 3 highly satisfied. More the score more is the patient satisfaction.

**Statistical analysis**

Demographic details of study participants, patient satisfaction score, prosthodontic history and patient behaviours was determined using descriptive analysis. Factors affecting the patient satisfaction was measured using Chi-Square test. Level of significance was kept at 5%.

**Results**

Table 1 shows that majority of study participants \(\{75 (41\%)\}\) belonged to 51–60 years of age group. Female study participants \(\{97 (53.01\%)\}\) were more male participants. Among all study participants, about 56 \(\{30.60\%\}\) of patients had completed their schooling. Study participants with private occupation \(\{74 (40.43\%)\}\) were more in number than government jobs. Married study participants \(\{118 (64.48\%)\}\) were more than others. Smokers \(\{94 (51.36\%)\}\) and non-drinker \(\{104 (56.84\%)\}\) were more than non-smokers and drinkers.

Table 2 shows that among all study participants, 103 \(\{43.72\%\}\) study participants possess removable partial denture. Duration of wearing prosthesis of most of study participants \(\{85 (46.33\%)\}\) was 6–12 months. Majority of study participants \(\{131 (71.58\%)\}\) had used 1–2 prosthesis till the time of interview. Maximum time of edentulousness before first prosthesis for maximum study participants \(\{116 (63.38\%)\}\) was 1–5 months. Most of the dentures \(\{77 (42.07\%)\}\) were given by general dental practitioners. Majority of patients \(\{87 (47.54\%)\}\) had given their dentures for repair for maximum of 0–2 times. Among all study participants \(\{78 (42.62\%)\}\) most of them were having exacting behaviour.

Among all study participants, majority of study participants were moderately satisfied with the retention \(\{79 (43.16\%)\}\),
Table 1: Demographic details of study participants (n=183)

| Demographic variables | n (%) |
|-----------------------|-------|
| Age (years)           |       |
| 21-30                 | 17 (9.28) |
| 31-40                 | 22 (12.02) |
| 41-50                 | 69 (37.70) |
| 51-60                 | 75 (41.00) |
| Total                 | 183 (100) |
| Gender                |       |
| Male                  | 86 (46.99) |
| Female                | 97 (53.01) |
| Total                 | 183 (100) |
| Education             |       |
| Uneducated            | 16 (8.74) |
| Schooling             | 56 (30.60) |
| Graduate              | 50 (27.32) |
| Post-graduate         | 41 (22.40) |
| PhD                   | 20 (10.94) |
| Total                 | 183 (100) |
| Occupation            |       |
| Unemployed            | 45 (24.59) |
| Private               | 74 (40.43) |
| Government            | 64 (34.98) |
| Total                 | 183 (100) |
| Marital status        |       |
| Married               | 118 (64.48) |
| Unmarried             | 5 (2.7) |
| Widow                 | 21 (11.47) |
| Widower               | 39 (21.31) |
| Total                 | 183 (100) |
| Smoking habits         |       |
| Smokers               | 94 (51.36) |
| Non-smokers           | 89 (48.64) |
| Total                 | 183 (100) |
| Drinking habits        |       |
| Drinker               | 79 (43.16) |
| Non-drinker           | 104 (56.84) |
| Total                 | 183 (100) |

Table 2: Prosthodontic history and patient behaviour of study participants (n=183)

| Demographic variables | n (%) |
|-----------------------|-------|
| Type of Prosthesis    |       |
| Removable complete    | 80 (56.28) |
| denture               |       |
| Removable partial     | 103 (43.72) |
| denture               |       |
| Total                 | 183 (100) |
| Duration of wear      |       |
| of prosthesis         |       |
| 6-12 months           | 85 (46.33) |
| 13-20 months          | 47 (25.68) |
| 21-30 months          | 28 (15.30) |
| More than 30 months   | 23 (12.69) |
| Total                 | 183 (100) |
| No. of removal        |       |
| prosthesis used till   |       |
| now                   |       |
| 1-2                   | 131 (71.58) |
| 3-4                   | 47 (25.68) |
| More than 4           | 05 (2.74) |
| Total                 | 183 (100) |
| Maximum Period of     |       |
| edentulousness before |       |
| first prosthesis      |       |
| 1-5 months            | 116 (63.38) |
| 5-10 months           | 35 (19.12) |
| 11-15 months          | 20 (10.92) |
| 16-20 months          | 12 (6.58) |
| Total                 | 183 (100) |
| Denture given by type |       |
| of dentists           |       |
| BDS                   | 77 (42.07) |
| MDS                   | 65 (35.51) |
| Dental quacks         | 41 (22.42) |
| Total                 | 183 (100) |
| How many times the     |       |
| denture had been      |       |
| repaired              |       |
| 0-2 times             | 87 (47.54) |
| 3-4 times             | 84 (45.88) |
| More than 4 times     | 12 (6.58) |
| Total                 | 183 (100) |
| Patient behaviour     |       |
| Philosophical         | 38 (20.76) |
| Exacting              | 78 (42.62) |
| Hysterical            | 47 (25.68) |
| Indifferent            | 20 (10.92) |
| Total                 | 183 (100) |

In the present study majority of the patients had private jobs as compared with study by Sanketh, et al in which majority of study participants were unemployed.

In the present study, most of the study participants were having removable partial denture. Duration of wear of Prosthesis for majority of study participants was 6–12 months. And majority esthetics {87 (47.54%)}, mastication {68 (37.15%)}, finish of the denture {89 (48.63%)} and overall satisfaction for maxillary and mandibular dentures {93 (50.81%)}. Most of the study participants were poorly satisfied with the speech {79 (43.16%)} due to removable prosthesis[Table 3].

On applying Chi-square test, it was determined that factors affecting various parameters of patient satisfaction was age significantly associated with mastication (P = 0.00*), and overall satisfaction (P = 0.05*). Gender was significantly associated with retention (P = 0.02*) and speech due to removable denture (P = 0.00*). Smoking habits with denture finish (P = 0.05*). Duration of wear of prosthesis was significantly associated with retention (P = 0.05*). No. of removal prosthesis used was significantly associated with aesthetics of denture (P = 0.05*). Number of times denture was repaired was significantly associated with retention of denture (0.05*). Patient behavior was significantly associated with overall patient satisfaction (P = 0.00*)[Table 4].

**Discussion**

The present study was conducted among patients undergone removable prosthodontic rehabilitation with age range of 30–60 years. Most of the study participants were females belonged to age group of 31–60 years. With respect to schooling most of the study participants had completed their schooling. In a study conducted by Silva, et al it was reported that ages of the patients ranged from 59 to 87 years, with an average of 68.8 years and females study participants were more than males. In this study most of the study participants had not completed their elementary schools. In study by Bhatt, et al males were more than females which is contrary to present study. While in the study by Ahmed, et al male study participants were more than females. In this study age range was from 18 to 87 years. In a study by Sanketh, et al majority of study participants were professional/PG and above.

In the present study majority of the patients had private jobs as compared with study by Sanketh, et al in which majority of study participants were unemployed.
Table 3: Patient satisfaction among patients undergoing removable prosthodontic rehabilitation. (n=183)

| Satisfaction parameters                                  | Poorly satisfied | Moderately satisfied | Highly satisfied | Total            |
|----------------------------------------------------------|------------------|----------------------|------------------|------------------|
|                                                          | n (%)            | n (%)                | n (%)            | n (%)            |
| Retention                                                | 55 (30.05)       | 79 (43.16)           | 49 (26.79)       | 183 (100)        |
| Aesthetics                                               | 38 (21.69)       | 87 (47.54)           | 38 (20.77)       | 183 (100)        |
| Speech                                                   | 79 (43.16)       | 74 (40.43)           | 30 (16.41)       | 183 (100)        |
| Mastication                                              | 65 (35.51)       | 68 (37.15)           | 50 (27.34)       | 183 (100)        |
| Finish of the denture                                     | 44 (24.04)       | 89 (48.65)           | 50 (27.33)       | 183 (100)        |
| Overall satisfaction for maxillary and mandibular dentures| 54 (29.50)       | 93 (50.81)           | 36 (19.69)       | 183 (100)        |
| Total                                                    | 355              | 490                  | 253              | 1098 (100)       |

Table 4: Factors affecting patient satisfaction by using Chi-Square test

| Demographic variables and Patient satisfaction | PATIENT SATISFACTION |
|------------------------------------------------|----------------------|
|                                                | Retention | Aesthetics | Speech | Mastication | Denture finish | Overall Satisfaction |
| Age (years)                                   | $X^2$      | $P$        | $X^2$  | $P$         | $X^2$          | $P$                  |
|                                              | 0.200      | 0.89       | 1.399  | 1.44        | 0.978          | 3.50                 | 0.098 | 1.29 | 0.119 | 0.05*       |
| Gender                                       | 1.560      | 0.02*      | 2.911  | 1.94        | 0.369          | 0.000*               | 0.335 | 2.77 | 1.255 | 0.08        | 0.288 | 3.09 |
| Socioeconomic class                          | 1.289      | 1.67       | 2.345  | 0.05        | 0.045          | 2.045                | 2.77  | 1.205| 1.72  | 1.643        | 2.36 | 1.356 | 1.49 |
| Marital status                               | 2.391      | 0.60       | 0.239  | 2.50        | 0.988          | 0.000*               | 0.693 | 0.39 | 1.399 | 1.35       | 1.379 | 0.99 |
| Educational status                           | 4.590      | 0.98       | 0.563  | 1.43        | 1.258          | 0.10                 | 1.203 | 0.40 | 3.442 | 1.74        | 2.590 | 2.78 |
| Smoking habits                               | 0.468      | 0.46       | 1.284  | 4.78        | 4.522          | 4.522                | 1.40  | 1.455| 1.30  | 0.490        | 0.05* | 2.562 | 0.93 |
| Drinking habits                              | 1.385      | 1.29       | 1.652  | 1.25        | 1.534          | 2.38                 | 1.877 | 2.56 | 1.284 | 3.349       | 0.093 | 1.56 |
| Type of prosthesis                           | 2.384      | 1.66       | 0.306  | 1.86        | 0.220          | 1.29                 | 0.358 | 1.90 | 0.457 | 1.26        | 1.259 | 1.84 |
| Duration of wear of prosthesis               | 2.333      | 0.05*      | 4.336  | 2.44        | 1.444          | 3.44                 | 0.044 | 3.69 | 1.279 | 0.27        | 1.667 | 3.48 |
| No. of removal prosthesis used               | 1.903      | 0.05       | 3.788  | 1.024       | 1.024          | 2.84                 | 1.036 | 0.44 | 0.094 | 4.59        | 0.386 | 0.13 |
| Denture given by type of dentists            | 1.459      | 1.98       | 1.204  | 1.48        | 3.904          | 1.23                 | 2.358 | 3.18 | 1.472 | 1.68        | 1.361 | 0.24 |
| No. of times denture repaired                | 0.496      | 0.05*      | 3.455  | 0.93        | 0.736          | 1.16                 | 0.447 | 0.92 | 3.380 | 1.00        | 0.344 | 1.09 |
| Patient behaviour                            | 1.229      | 1.40       | 0.096  | 0.49        | 0.006          | 2.57                 | 1.228 | 1.23 | 0.431 | 2.05        | 1.455 | 0.00* |

of patients have exacting attitude. In a study by Epifania, et al.[14] minimum duration of wear of denture by patients was 1 month. Contrary results were seen in study by Sanketh, et al.[15] in which majority of patient were having philosophic attitude.

In the present study among all study participants, majority of study participants were moderately satisfied with the retention, esthetics, mastication, finish of the denture and overall satisfaction for maxillary and mandibular dentures. Most of the study participants were poorly satisfied with the speech due to removable prosthesis. In the study by Bhatt, et al.[16] majority of study participants were either very happy or happy by retention, esthetics, mastication, speech, finish of the denture and overall satisfaction for maxillary and mandibular dentures. While in study by Ahmed, et al.[17] majority of study participants were satisfied with speech, mastication, esthetics after removable denture.

With respect to factors effecting the patient satisfaction, in the present study age significantly associated with mastication and overall satisfaction. Gender was significantly associated with retention and speech due to removable denture. Smoking habits with denture finish. Duration of wear of prosthesis was significantly associated with retention. No. of removal prosthesis used was significantly associated with aesthetics of denture. Number of times denture was repaired was significantly associated with overall patient satisfaction. In contrary to this in study by Sanketh, et al.[18] satisfaction grades and gender had positive correlation. It was reported that higher the educational qualification, higher was the satisfaction with treatment. In study by Ahmed, et al.[19] it was reported that there was significant difference between patients esthetics and age groups.

Material used in removable prosthesis fabrication also have an impact on the patient satisfaction which was reported in a study done by Sherif A. Sadek and Dina Elawady[20] in which they concluded that patient satisfaction was improved with thermopress removable prosthesis as compared with vitallium removable prosthesis. In one of the clinical trials done by Fueki K[21] et al. reported that patient satisfaction was higher when the removable prosthesis was fabricated with thermoplastic resin as compared with metal clasp retained removable prosthesis.

Limitations of the study include the non representative sample, hence the results cannot be generalized, and further multicentric studies with larger sample size could give the conclusion more generalizable.

If the patients are satisfied with the prosthesis in terms of restoring of masticatory function and speech, the psychological problems associated with the prosthesis can be prevented. The
most important function of speech and chewing has to be restored and maintained so that the normal expectations from a person in terms of social engagement and nutritional levels can be maintained.

**Conclusion**

It was concluded that majority of study participants were moderately satisfied with the retention, esthetics, mastication, finish of the denture and overall satisfaction for maxillary and mandibular dentures. Most of the study participants were poorly satisfied with the speech due to removable prosthesis. Factors affecting parameters of patient satisfaction was age, gender, smoking habits, duration of wearing prosthesis, no. of removal prosthesis used, number of times denture was repaired, patient behaviour was significantly associated with overall patient satisfaction.

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**Conflicts of interest**

There are no conflicts of interest.

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