

Patient Satisfaction with Types of Complete Denture: A Study Using Validated Indonesian Version of Patient's Denture Assessment (PDA-ID) – A Pilot Study

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Abstract

To analyze the relationship between types of complete denture and patient satisfaction using the validated Indonesian version of patient's denture assessment (PDA-ID).

A cross-sectional study was conducted that consisted of 19 subjects (14 male, 5 female), aged 45–70 years old, who wore types of complete denture (conventional complete dentures, overdentures, or a single complete denture). All participants were selected through consecutive sampling methods then classified into conventional complete denture (8 subjects), overdenture (2 subjects) and single complete denture (9 subjects). The patients were asked to complete the PDA questionnaire with the age, sex, education level, duration of edentulousness (less than 6 months or more than 6 months) and previous denture experience. The PDA score was compared between patients with different types of complete denture, different age, sex, education level, duration of edentulousness and previous denture experience.

Statistically, there were no significant differences in patient satisfaction between different types of complete denture ($p = 0.830$), age ($p = 0.465$), sex ($p = 0.693$), education level ($p = 0.219$), duration of edentulousness ($p = 0.211$), or denture experience ($p = 0.363$).

Type of complete denture, age, sex, education level, duration of edentulousness, and denture experience were not associated with patient satisfaction with the denture. The results of this study found that with careful treatment planning and procedure of good quality during denture construction, the type of complete denture should not affect patient satisfaction.

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Introduction

Edentulousness is associated often with low education level and family income. Several cross-sectional studies on the prevalence of edentulousness have showed its association with age and gender in most countries.^{1,2} Females have higher rates of edentulism than males.¹ Edentulism can affect a patient's quality of life and cause a decrease in speech function and mastication.^{3,4}

The conventional complete denture is a classic treatment for edentulism. The reconstruction for such treatment can be

challenging, and depends on the condition of the residual ridge. The success of a conventional complete denture depends on the patient's ability to adapt to the limitations of complete dentures.⁵ The clinician has alternatives for the reconstruction of overdentures or of a single complete denture.⁶ The inadequacy of retention and stability of the conventional complete denture have always been a problem. This inadequacy can be overcome by the reconstruction of an overdenture or Cu-sil denture. A Cu-sil denture is a complete denture with holes, which allow the remaining natural teeth to emerge through the denture.⁷⁻¹⁰

An overdenture is a removable dental prosthesis that covers and rests on one or more of the roots of the remaining natural teeth and/or dental implants. The additional support, stability, and retention of the overdenture is obtained from implants or modified natural teeth, which provide more support than the edentulous ridges alone.¹¹⁻

¹³ A study shows greater satisfaction scores of

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tooth retained overdentures using ball attachments compared to conventional tooth supported overdentures.¹⁴ Moreover, another study reveals an overall survival rate for dental implant with overdenture rehabilitation within the past 20 years is 95.3%.¹⁵

The single complete denture may be constructed in three ways. One is constructed with the opposing arch if there are a sufficient number of natural teeth or fixed restoration prostheses. Second is constructed to the opposing partially-edentulous arch, where the missing teeth have been or will be replaced by a removable partial denture. Third is constructed to an opposing existing acceptable complete denture, whether it be mucosal-borne, tooth-supported, or implant-supported. Dentist and patient should realize the importance of intraoral condition of the patient to achieve retention, stability and support of the denture. For a number of reasons, the maxillary single denture is often more successful than a mandibular denture.¹¹

The indications and contraindications of each type of complete denture, based on the patient's condition, have to be considered. In this way, the clinician can decide the best type of complete denture for individual patients. Patient satisfaction depends on many factors, including taste, retention, ease of cleaning, phonetic function, pain, ease of chewing, comfort, fit, and esthetics.^{16,17} Generally, the patient and the dentist do not have the same perception about the success of the denture.¹⁷ A multidimensional self-assessment is used to assess the condition of the complete denture. It consists of six major aspects. They are function, aesthetic and speech, lower denture, expectation, upper denture and importance.¹⁸ However, patient self-assessment is a more economical method and is expected to be a more specific and valid way of measuring the success rate of a denture.¹⁹

The questionnaire used for patient self-assessment is called the Patient's Denture Assessment (PDA). This questionnaire has been validated in Indonesia by the dental research team from the Faculty of Dentistry, the Universitas Indonesia (2017). The aim of this study was to evaluate the relationship between types of complete denture and patient satisfaction using the validated Indonesian version of the PDA (PDA-ID).

Materials and methods

This cross-sectional study was conducted in The Dental Teaching Hospital Faculty of Dentistry, the Universitas Indonesia and was approved by the Ethical Committee Faculty of Dentistry, Universitas Indonesia (No.37/Ethical Approval/FKGUI/V/2018). The subjects of this research were 19 complete denture wearers (14 male, 5 female), aged 45–70. All of the complete dentures were fabricated by a postgraduate student and an undergraduate student. The subjects were selected using the following sampling methods.

The inclusion criteria were as follows: (i) complete denture wearers including conventional complete dentures, overdentures, or gasket (Cu-sil) dentures on both jaws or on either one of the jaws (the Cu-sil denture were classified as single complete denture); (ii) having the ability to communicate and come to The Dental Teaching Hospital Faculty of Dentistry, Universitas Indonesia for three consecutive weeks. The exclusion criteria were as follows: (i) patients with any chronic or debilitating disease particularly with oral manifestations; (ii) patient with oral inflammatory condition due to ill-fitting denture. The Cu-sil denture wearers were classified as single complete denture wearers due to the opposing arch of the complete denture were fabricated for removable denture with the remaining teeth. The consecutive sampling methods were selected because it is considered for its simplicity and also as the best methods of the non-probability sampling methods. In consecutive sampling methods, all the patients who come to The Dental Teaching Hospital Faculty of Dentistry, Universitas Indonesia and meet the inclusion criteria were selected as the participant for this study. The new complete denture which has been constructed for all participants in this study were used for three weeks after delivery.

All participants provided their informed consent before completing the questionnaire. Patient satisfaction was measured with the Indonesian version of the PDA questionnaire. This questionnaire consists of 22 questions, divided into six major aspects, including function, aesthetics, speech, lower denture, expectations, upper denture, and importance¹⁹ (Table 1). In the questionnaire, each question item was measured using 100-mm Visual Analogic Scale (VAS),

which consisted of a horizontal 100-mm line anchored by words representing the worst situation at the left extremity of the scale and words representing the best situation at the right

extremity. The total range of value for 22 questions is 0-2200 (minimum-maximum) for each participant.

Aspect	No.	PDA-ID (Indonesian version)
Function	1	How much pain do you feel?
	2	How easy is it for you to swallow food boluses and water?
	3	How well do you enjoy your meal?
	4	How worn out does your jaw feel?
Aesthetics & Speech	5	How easy is it for you to speak?
	6	How worried are you about your mouth?
	7	How often do your dentures click when chewing?
	8	How worried are you about other people watching?
Lower Denture	9	How often does food debris get stuck under your lower denture?
	10	How is your lower denture retained on the ridge?
	11	How does your lower denture fit?
	12	How uncomfortable is your lower denture?
Expectations	13	How satisfactory will the new dentures be?
	14	How problematic will the new dentures be?
	15	How well will the new dentures fit?
Upper Denture	16	How often does food debris get stuck under your upper denture?
	17	How does your upper denture fit?
	18	How often does your upper denture fall down?
Importance	19	How much do you consider your dentures as part of your body?
	20	How important are your dentures to you?
	21	To what degree can you care for your dentures without any difficulty?
	22	How at ease do you feel when wearing your dentures?

Table 1. Content of Indonesian validated version of PDA

Statistical analysis was performed using SPSS software (IBM SPSS software). Statistical significance was set at $p < 0.05$. The normality of the data was calculated using the Kolmogorov-Smirnov test, in which the confidence level was set at 95%. The ANOVA test was used to analyze the differences in PDA scores (patient's satisfaction toward their denture) between the types of complete denture. An independent *t*-test was used to analyze the differences in PDA score (patient's satisfaction toward his/her denture) between his/her age group, sex, education level, duration of edentulousness, and denture experience. The age group were classified into two categories as followed: (i) 45-60, (ii) >60 years old. The sex group were classified into two categories as followed: (i) Male, (ii) female. The education level group were classified into two categories as followed: (i) Basic, (ii) Advanced. The duration of edentulousness were classified into two categories as followed: (i) 0-6 months, (ii) >6 months. The previous denture experience group were classified into two categories as followed: (i) have experience for up-to-36 months in using complete denture before coming to the The Dental Teaching Hospital Faculty of

Dentistry in order to construct the new complete denture (ii) never have experience in using complete denture before.

Results

A total of 19 subjects, consisting of 14 men and 5 women, participated in this study. The mean and standard deviation of the PDA questionnaire was 1894.0 ± 213.3 with a minimum-maximum score of 1303–2191. Nearly 70% of the subjects were over 60 years old. Eighty-four point two per cent of existing subjects had experience before in using a complete denture. Fifty-two point six per cent of subjects had a duration of edentulousness of less than six months (Table 2).

Statistically, no significant difference ($p = 0.830$) was found between different types of denture (conventional complete, single complete, overdenture). Patient satisfaction with dentures was not affected by age group ($p = 0.465$), sex ($p = 0.693$), education level ($p = 0.219$), duration of edentulousness ($p = 0.211$), and previous denture experience ($p = 0.363$) (Table 3).

		Frequency	Percentage
		n = 19	
Age	45-59 years old	6	31.6
	>60 years old	13	68.4
Sex	Male	14	73.3
	Female	5	26.3
Education level	Basic	5	26.3
	Advanced	14	73.3
Duration of edentulousness	0–6 months	10	52.6
	>6 months	9	47.4
Previous denture experience	Never used	3	15.8
	Have used	16	84.2
Type of complete denture	Conventional	8	42.1
	Single complete	9	47.4
	Overdenture	2	10.5

Table 2. Frequency distributions of subjects

		Mean (SD)	Min-Max	p
Age	45-59 years old	1839.5(292.33)	1303–2082	0.465
	>60 years old	1919.2(174.65)	1648–2191	
Sex	Male	1906.0(235.04)	1303–2191	0.693
	Female	1860.4(152.93)	1705–2094	
Education level	Basic	1791.2(294.6)	1303–2059	0.219
	Advanced	1930(175.5)	1648–2191	
Duration of edentulousness	0–6 months	1953(155.6)	1648–2094	0.211
	>6 months	1828(256.7)	1303–2191	
Previous denture experience	Never used	1788(429.6)	1303–2121	0.363
	Have used	1913.9(165.3)	1648–2191	
Type of complete denture	Conventional	1857.5(285.7)	1303–2191	0.830
	Single complete	1923.3(152.4)	1648–2094	
	Overdenture	1894.0(213.3)	1762–2055	

Table 3. Patient satisfaction scores from PDA by the types of complete denture, age group, sex, education level, duration of edentulousness, and previous denture experience

Discussion

The complete dentures used by subjects in this study were in good condition, based on standard procedure, and were of dental material fabricated in The Dental Teaching Hospital Faculty of Dentistry, the Universitas Indonesia, by a prosthodontic resident and undergraduate student who had been supervised by a prosthodontist. Types of complete denture have indications and contraindications according to the intraoral condition of the patient. Overdentures have been reported to be more satisfactory than conventional complete dentures.⁵ In this study, there is no statistical relationship between patient satisfaction and types of complete denture. The success of a complete denture depends on many factors. Also, the adaptive capability of the patient has an important role in the success of the treatment, since conventional complete dentures have limitations in retention and stability.⁵ The ideal scheme of single complete denture occlusion is hard to achieve, because often the condition of the remaining teeth is mostly unfavorable for the arrangement of the denture. Thus, the success of the single complete denture is unpredictable.¹¹

Also, in this study, age, sex, education level, duration of edentulousness, and previous

denture experience did not show a statistical correlation with patient satisfaction. About 80% of the subjects have previous denture experience for up-to-36 months. Some previous studies have agreed with this result.^{16,17} Meanwhile, several previous studies have suggested that denture experience affects a patient's level of satisfaction. Turker *et al.* stated in their study that subjects who had used a full denture for more than three years reported higher satisfaction with their complete denture.¹⁶ Several studies have shown the great impact on patient's acceptance of new dentures that the dentist-patient relationship and psychological factors have (Carlsson *et al.*, 1967). All clinicians who have fabricated complete dentures know that patient satisfaction is not based only on the technical quality of the dentures, but also on psychological and emotional factors related to the dentures in maladaptive patients, even though technical advice is preferable.^{19,20} Landesman (1997), have reported how to overcome such problems, that the dentist must have a high capability to communicate and listen efficiently to his/her patient.^{16,21}

Some studies demonstrate a highly significant correlation between the stability/retention of a mandibular denture and patient satisfaction in general.²² Retention and stability

correlate with physiological factors (alveolar ridge resorption, quality of saliva, and quality of denture-bearing area).^{5,10} These factors must be considered and evaluated in further studies, since they were not observed in this study. Furthermore, patients' satisfaction toward their dentures are varied. Berg states that the construction of a good complete denture depends on technical, biological, and physiological interactions between the patient and dentist. The majority of patients are satisfied with their complete dentures; however, even if the denture is well constructed, some patients are still dissatisfied with their new dentures. The success of the denture reconstruction depends on both the dentist and the patient. The patient's motivation and cooperation during the treatment procedure, use, maintenance, and post-insertion procedure have a positive impact on the success of the denture. Also, a patient's personality and attitude toward a new denture are considered as factors in achieving satisfaction.²¹ Nevertheless, this study does not observe those two factors. Alfadda (2014) reported that a clinically stable mandibular denture was the most important determinant of patient satisfaction.²² In accordance with that study, mandibular denture have been included as one of major aspect to be evaluated in PDA-ID.

The limitation of this study is the size of the sample that should be considered for better result for further study. Some studies have reports on patient's satisfaction with many factors related to it.²³⁻²⁷ Meanwhile, the emphasize of this study was to differentiate other factors especially the types of complete denture with patient's satisfaction.

Conclusions

The type of complete denture, age, sex, education level, duration of edentulousness, and denture experience is not associated with patient satisfaction with dentures. With careful treatment planning and procedure of good quality during denture construction, the type of complete denture should not affect satisfaction of patient with his/her denture.

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Declaration of Interest

The authors declare that there are no conflicts of interest.

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