

Awareness and Demand of Prosthodontic Treatment for Tooth Loss Replacement

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Abstract

Tooth loss relates to functional problems and have psychological and social impact. At the end it can cause impairment of Oral Health Related Quality of Life (OHRQoL). Self-awareness is one of the very important factor that influence demand for tooth loss replacement. This study was aimed to analyze relation between self-awareness and demand for prosthodontics treatment and other factors that influence it.

A cross sectional study was conducted on 115 adults aged 34 to 80 year using convenience sampling method in Depok, Jawa Barat, Indonesia. Subject was clinically examined for location of tooth loss, posterior contacts (Eichner index) and denture status. Questionnaire used to assess awareness for missing tooth replacement and demand for prosthodontics treatment. Sociodemographic data were also collected. Spearman, Mann-Whitney and Kruskal-Wallis test were used to assess the relation between variables.

Subject age was between 35-80 years old, and dominated by female (83.5%). Only gender has a significant influence to the awareness of prosthodontics treatment. Awareness and demand for prosthodontic treatment are related ($p < 0.05$). Increasing the awareness for replacing missing tooth through oral health education could be one preventive procedure to change public perception about their oral and general health.

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Introduction

Tooth loss could interfere with stomathognathic system and causing structural and functional changes such as mastication, digestion, phonetic, aesthetic, and temporomandibular disorder and also has psychosocial impact. In fact, a systematic review has presented some conclusions that tooth loss is associated with impairment of Oral Health Related Quality of Life (OHRQoL). It was also shown that location and distribution of tooth loss affect the severity of the impairment.¹

While many country showed a decrease of tooth loss prevalence, Indonesia have an opposite condition. Basic health survey in 2007 and 2013 revealed that mean score of tooth loss

has increased in every age group; the highest was age group of above 65, which was from 16.99 to 17.05.^{2,3}

Professional assessment based on disease oriented and medical model is the most common type of health assessment, which called normative need. Normative need of tooth loss is prosthodontics treatment for tooth replacement. Because it's not a life threatening disease, replacement of tooth loss often not became a priority. The gap between normative need and individual need made demand of prosthodontics treatment is not an option. Self-perceived need is highly individual, oral health satisfaction and self perceived quality of live interfere with this treatment decision.^{4,5}

Before self-perceived need is expressed by one individual, he or she must believe that his/her is susceptible to a condition such unreplaced missing tooth condition could cause serious functional impairment of their general health status. This lack of awareness directly influences individual decision making for demanding a treatment. This 'Health Belief Model' (HBM) theory proposed by Hockbaum in

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1950 was a concept used to understand individual's decision making based on their health belief.^{6,7} The HBM is a staged theory, with each step in the decision making process dependent on the previous decision or belief.

Other factors such as number and location of absent teeth, posterior contact teeth, age, gender, impaired function, and other sociodemographic, distance and financial determinants are known as important ingredients of perceived treatment needs and, as consequence, essential aspects of clinical decision making.^{4,5,7} Loss of posterior contact support has been reported also could affect occlusal forces and masticatory performance, Therefore its used to determine the relation of subject awareness and demand for prosthodontics treatment.

Therefore this study aimed to investigate relationship between awareness and demand of prosthodontics treatment for missing teeth. Also to analyzed their association between influenced factors, such; age, gender, educational level, occupation, location of tooth loss, existing posterior contacts, denture wearer, treatment cost and distance to dental health facilities.

Materials and methods

The study was conducted at one event "Jamboree for Elderly" in Depok, West Java, Indonesia. Non-probability consecutive sampling method was done for this cross sectional study. Adults who had at least one missing teeth (excluding the third molar) and could cooperate during examination and interview were included. Mentally and physically handicapped subjects were excluded.

Ethical review committee of Faculty of Dentistry, Universitas Indonesia approved this research. After taking informed consent from subject, an oral examination was carried for missing tooth and denture status with standard examination tools. Then, subjects were interviewed by researcher for answering questions regarding awareness and demand about prosthodontics treatment for missing tooth.⁸ The questions for subject's awareness and demand consist of 5 questions each. Each questions explored different reasons about the importance and subject's willingness of replacing the missing tooth, such as mastication, phonetic, esthetic, self-esteem and difficulty to concentrate.

Subject's responses to the items were made of 5-point scales ranging from zero (0) as not important at all to four (4) as very important. Total score were analyzed as a numeric data.

Missing tooth status collected the location and number of tooth that had been extracted. Eichner index has been used widely to classify posterior occlusal contacts based on existing natural or restored tooth contact between premolar and molar areas which counted as one zone, yielding of a total of four supporting zones.⁹ The Eichner index divides the occlusal status into three main groups (A, B and C) and further divides each of these into three (A1-A3), four (B1-B4) and three (C1-C3) subgroups.^{9,10}

Sociodemographic data were collected such gender, age, occupation and educational level, also others factor such as treatment cost for prosthodontics treatment and distance to dental health facilities.

Mann-Whitney test and Kruskal-Wallis test were applied to analyze differences among variables with awareness and demand for prosthodontics treatment. Spearman analysis was used to identify significance correlation between awareness and demand of prosthodontics treatment. Statistical analyses were performed with SPSS software (Statistical Package for Social Sciences), version 20.

Results

A total of 115 subjects were included in the study to determine the awareness and demand for prosthodontics treatment among participant who visited Jamboree for elderly at Depok, Jawa Barat. Table 1 described that 83.5% and 16.5% were female and male respectively. Subject ranged in age from 35-80 years with 43.5% was in-group of 55-64 years old, 32 % subjects in more than 65 years old group and 24.3% in range aged of 35-54 year. Mostly the distribution of awareness and demand for prosthodontics treatment were in middle range from the total value, which is between 11-15. This showed the level of awareness and demand for tooth loss replacement was middle to high.

There was statistically significant relation between gender and awareness of prosthodontics treatment. Median of male awareness was 8, otherwise female awareness was 13. The difference distribution also showed for demand median value in gender factors, even

though the significance had not found. Educational and employment status (table 1,2) presented had no significant relation with awareness and demand of prosthodontics treatment. Most of the subject was unemployed (92.1%), and 45.8 % finished secondary level of education.

	AWARENESS				DEMAND	
	N	%	Median [All Min-max (0-20)]	p	Median [All Min-max (0-20)]	p
Gender						
Male	19	16.5	8	.039	6	.24
Female	96	83.5	13	*	15	
Age (years)						
35-54	28	24.3	13	.26	10.5	.15
55-64	50	43.5	14		15	
>65	37	32.2	10		7	
Education level						
Primary	15	13	13	.95	15	.96
Secondary	63	45.8	12		14	
Higher Level	37	32.2	13		13	
Occupation						
Unemployed (Housewife, Pension, No occupation)	10 6	92.1	12	.89	14	.56
Employed	9	7.9	14		15	
Location of Tooth Loss						
Loss	0	0	0	.27	0	.60
Only anterior teeth	76	66.1	13		15	
Only posterior teeth	39	33.9	11		12	
Anterior and posterior teeth						
Posterior tooth contacts (Eichner Index)						
A, B1, B2 & B3	96	83.4	12.5	.57	14	.56
B4 & C	19	16.6	12		14	
Denture User						
User	25	21.7	13	.35	15	.32
Non-user	90	78.3	11		13	
Distance to health facilities						
No barrier	48	41.7	11	.25	10	.18
Barrier	67	58.3	13		13	
Treatment cost						
No barrier	64	55.6	13	.69	14.5	.69
Barrier	51	44.4	12		14	

* Significance value p<0.05

Table 1. Relation between sociodemographic factors, awareness and demand score for prosthodontics treatment (N=115).

Variables	Coefficient correlation (r)	p
Awareness and demand for prosthodontic treatment	.865	0,000*

* Spearman correlation analysis, significance value p< 0.05

Table 2. Correlation between awareness and demand for prosthodontic treatment.

In this study, no subject had lost only anterior teeth, 66,1 % lost only posterior teeth and their awareness. Their demand for prosthodontics treatment was higher than group

that lost both in anterior and posterior. Among all subjects with tooth loss, 21.7% replaced their teeth with dentures. Awareness and demand for replacing missing tooth in their relation of location of missing tooth, contact between antagonist tooth (eichner index) and denture status also had no significance.

The result of Spearman test showed the correlation coefficient between awareness and demand of replaced missing teeth with prosthodontics treatment was strong (r=0.865) and statistically significant (p<0.05).

Discussion

Many studies showed tooth loss decreasing oral function and give impact in general health performance.¹ In fact, inefficient chewing ability were associated with incidence of metabolic syndrome and will generate impairment for quality of life.¹¹ Unfortunately, replacing teeth after extraction is not a priority. Cognition component as one of the factor influence behavior consist of knowledge, beliefs attitudes, expectation and intentions, showed that if subjects lack of healthy knowledge, it is difficult to behave in healthy manner.^{6,7} Patient's knowledge and awareness about prosthodontics treatment is one of the key factors in motivating patient to increase the level behavioral changes, from aware to become a self perceived need, then become an action for demanding a treatment. This study was to know the awareness and demand level of subjects visiting 'Jamboree for Elderly' as a pilot study associated with influenced factors.

Majority of subjects who participated in this study were female (96%), a housewife, pensioner and unemployed (92.1%) also contributed high proportion among total subject. Higher female proportion may be one of the main reasons that median awareness and demand for prosthodontics treatment value were higher than male, these also showed significance differences for awareness with gender factor. Suresh et al also found that females are more aware about the tooth replacement for aesthetic and mastication than male.¹²

Age subject's distribution was from 35-80 years, 43.5 % were 55-64 years old, which their awareness followed by demand for prosthodontics treatment was higher than younger (34-44) and older group (> 65 year of

age). This finding was not coincide with other study in German, Schutzhöld et al found unreplaced teeth is the most important factor of self perceived oral health for adults (35-44 year of age) than the older group (65-74 year of age).¹³ The possible explanation may cause awareness and demand of replacing tooth loss for aesthetics reason was higher in young adult, other wise older people considered an impaired oral health status as normal part of the ordinary aging process.

Other sociodemographic factors, educational level and occupation had no significance differences in this study.

Due to the limitation of this study, subject variants didn't represent all possibilities location of tooth loss, we couldn't analyze awareness and demand of tooth loss replacement in anterior region only. Nevertheless this study revealed that 66,3% tooth loss happened only in posterior, with median value of demand and awareness was higher than tooth loss in anterior and posterior region. These descriptive results showed that aesthetic was not the main reason for subject seeking for prosthodontics treatment, not as many studies has revealed.^{9,14,15,16} Functional rehabilitation such as chewing efficacy was more reasonable option for demanding tooth replacement. This evident also in the study done by Suresh in India, that most edentulous subjects only aware of mastication as the function of the denture.¹²

The Eichner index was used in this study to evaluate performance of mastication from posterior contact of existing natural teeth. We divided the eichner classification into 2 groups for statistical analyses, based on the finding that sub group B2 and B3 are the critical border to maintain efficacy of masticatory performance and occlusal contact.⁹ Elias and Sheiham also reported the presence of at least three premolars in occlusion are the best predictors of patient's satisfaction.¹⁰ The first group still has posterior contacts even only one unilateral contact (A, B1, B2 & B3) and the other group didn't have any posterior contacts at all (B4 & C). Even though awareness and demand for prosthodontics treatment of two group showed no significance differ, the awareness and demand median value of both groups had the same value, which quite higher. This may explain because tooth loss gradually associated with low intake of food and change in dietary routine. A person with

tooth loos can adapt their impairment of chewing by change their type and form of consumption food.¹⁷ Soft food and small pieces food was choose in order to manage their lack of ability to chew.

We also analyzed awareness and demand of subjects that already used denture (21.7%), and there is no significancy between two groups, but median value of awareness and demand slightly higher among denture user compared than non-user. Denture user had better knowledge and experience about prosthodontics treatment, replacing their missing teeth gave advantages for better oral function and general health well being.

Treatment cost and distance to health facilities were not found as barrier for subject to have awareness and demand for prosthodontic treatment in this study. These results differ than many studies that conclude otherwise.^{4,5,18} A study conducted in industrialized country by Bagewitz et al, found that age, number of tooth loss and cost barrier were the three major factors related with general health in adult Swedish people.¹⁸

The study was also aimed to correlate the awareness with the demand of prosthodontics treatment of tooth loss. Correlate of the awareness and demand help a clinician to predict patient decision making of prosthodontics treatment. The result of the study showed strong correlation between awareness and demand for prosthodontics treatment of tooth loss. No similar study with the same purpose had found to compare ours, but theoretically of behavioral science could explained this situation.^{6,7} As one of the main factor for behavior changes, lack of awareness effect the decision making of treatment. Better knowledge about treatment option, cost and benefit also patients expectation can change or modify patient belief and motivation in order to achieve successful prosthodontics treatment.

The limitation of this study is that it was conducting on one event and which was not representing general population and hence the results cannot be generalized to the whole population. Other weakness in this study that it has a small sample size of 115.

Conclusions

Within this limitation of this study,

awareness and demand level of prosthodontics treatment of subject mostly in medium level. The strong correlation between awareness and demand showed that if dental professional can increase awareness of subject to replace the missing teeth, it would linearly increase their demand too. Education about awareness of dental and prosthodontics treatment can be apply individually in dental practices or generally for larger population.

Declaration of Interest

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