ORIGINAL ARTICLE

Bali Medical Journal (*Bali Med J*) 2018, Volume 7, Number 3: 626-630
P-ISSN.2089-1180, E-ISSN.2302-2914

Published by DiscoverSys

The relationship between anterior tooth loss and quality of life among elderly in Posbindu, Bojongnangka, Kelapa Dua Sub-District, Tangerang, Jakarta-Indonesia

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ABSTRACT

Background: Oral health can affect the quality of life. Tooth loss, as an oral health problem in elderly, is mainly caused by caries and periodontal disease. This study aims to determine the effect of tooth loss on the quality of life among elderly

Methods: A cross-sectional analytic study was conducted at 5 Posbindu, Bojongnangka, Kelapa Dua Sub-District, Tangerang. There were 93 respondents aged ≥ 50 years old enrolled in this study by purposive sampling method. Self-administered Quality of Life questioner from Oral Health Impact Profile (OHIP-14) was carried out. Data were analyzed using chi-square and logistic regression.

Results: Mean value of tooth loss varied from 1 to 28 teeth about 11.24 ± 7.4, anterior tooth lost from 0 to 12 was 2.72 ± 3.47, while posterior tooth loss from 1 to 14 teeth was 8.52 ± 4.46. About 51.6% of elderly having a good quality of life. There was a significant relationship between age and quality of life (P = 0.000; OR 8.31) and between quality of both anterior (P = 0.017; OR 2.00) and posterior tooth loss (P = 0.031; OR 2.50). Quality of life had no significant relationship with gender, work status, and education (P > 0.05). In the last model of logistic regression, we got age and anterior tooth lost affect quality of life significantly (P = 0.000; OR 8.76 and P = 0.022; OR 2.97)

Conclusion: We concluded that age and anterior tooth lost are important factors of quality of life among elderly.

Keywords: Age, Elderly, Quality of life, and Tooth loss

Cite This Article: Umniyati, H., Surachmin, A., Ambarsati, G. 2018. The relationship between anterior tooth loss and quality of life among elderly in Posbindu, Bojongnangka, Kelapa Dua Sub-District, Tangerang, Jakarta-Indonesia. *Bali Medical Journal* 7(3): 626-630. DOI:10.15562/bmj.v7i3.1192

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Received: 2018-05-18
Accepted: 2018-6-25
Published: 2018-8-1

INTRODUCTION

Poor oral state conditions can interfere with the function and activity of oral cavity so that it will have an impact on quality of life. In general, elderly people will experience decreased cognitive and psychomotor functions so that it will lead to the slow response and less active behavior. The loss of teeth in the elderly apart from age is also due to increased dental caries and periodontal disease.[1] These two most prevalent oral diseases, often do not cause symptoms in early stages. They seriously impair the quality of life in large number of individuals and can affect various aspects of life, including oral functions, appearance, and interpersonal relationship.[1]

The World Health Organization (WHO) has defined a quality of life (QoL) as an individual's perception of their position in the context of culture and value systems which related to their goals, expectations, standards, and concerns.[2] It is increasingly recognized that clinical indicators are insufficient to describe health status including oral diseases. Therefore, to know the quality of life, models and measures have been developed to assess the impact of oral disease on Quality of life. Many instruments have been developed. However, the short version of Oral Health Impact Profile (OHIP- 14) has been widely used in several countries.2 The Oral Health Impact Profile (OHIP-14) is a 14-item questionnaire designed to measure self-reported functional limitation, discomfort, and disability attributed to oral conditions.[3] It is derived from an original extended version of 49-items based on a theoretical model developed by the World Health Organization (WHO) and adapted for oral health by Locker.[4,5] The OHIP-14, as a short-questionnaire, has been shown to be reliable; 3 sensitive to changes;[6,7] and having adequate cross-cultural consistency.[8]

Tooth loss adverse oral health-related quality of life (OHRQoL). Number, location, and distribution of tooth loss affect the severity of impairment.[9] The negative impact on oral health-related quality of life (OHRQoL) may also be due to poor speech, pain, and dissatisfaction with appearance.[10,11]

According to Basic Health Research (Riskesdas) data in 2007, the prevalence of tooth loss in Indonesia about 24% for population aged ≥ 65 years by 17,6% and followed by aged 55-64 year which

Table 1 Demographic characteristic

Variable	n	Percentage
Age		
<60 years	27	29%
≥60 years	66	71%
Mean ± SD of Age	62.3 ± 6.6	
Gender		
Man	13	14%
Women	80	86%
Education		
No Education	25	26.9%
Elementary school	21	22.6%
Junior high school	17	18.3%
Senior high school	26	28%
University	4	4.3%

Table 2 The mean of tooth loss in anterior and posterior

Variable	Mean ± SD	Range
Tooth loss	11.24 ± 7.4	1 - 28
Anterior tooth loss	2.72 ± 3.47	0 - 12
Posterior tooth loss	8.52 ± 4.46	1 - 16

Table 3 Quality of life using Oral Health Impact Profile -14 (OHIP 14)

How often do you have this complaint in the past month?	Never (%)	Hardly Ever (%)	Occasio nally (%)	Fairly Often (%)	Very often (%)
Functional Limitation					
Trouble pronouncing words	3.2	45.2	10.8	30.1	10.8
Sense of taste worse	1.1	41.9	17.2	32.3	7.5
Physical Pain					
Painful aching in mouth	2.2	47.3	16.1	19.4	15.1
Uncomfortable to eat foods	1.1	11.8	49.5	22.6	15.1
Psychological discomfort					
Self conscious	5.4	41.9	9.7	25.8	17.2
Felt tense	1.1	60.2	8.6	23.7	6.5
Physical discomfort					
Diet consumed unsatisfactory	0	33.3	21.5	36.6	8.6
Interrupt meals	0	44.1	18.3	22.6	15.1
Psychological disability					
Difficult to relaxed	4.3	54.8	11.8	23.7	5.4
Embarrassed	0	54.8	7.5	25.8	11.8
Social disability					
Irritable with other people	1.1	69.9	15.1	12.9	1.1
Difficulty doing usual jobs	1.1	66.7	10.8	19.4	2.2
Handicapping					
Life less satisfying	7.5	68.8	10.8	12.9	0
Totally unable to function	4.3	71.0	3.2	20.4	1.1

Table 4 Distribution Quality of Life according to OHIP 14 Index

Quality of life	n = 93	%
Good	48	51,6%
Not Good	45	48,4%

Table 5 Relationship between OHIP-14 and other variables

Variable	OHIP		P Value	OR (95% CI)
	Not Good (%)	Good (%)		
Aged				
≥60 years	39 (59.1%)	27 (40.9%)	0,000	8.31 (2.58 – 26.75)
<60 years	4 (14.8%)	23 (85.2%)		
Gender				
Man	7 (53.8%)	6 (46.2%)	0.553	
Women	36 (45%)	44 (55%)		
Work Status				
Not work	31 (41.3%)	44 (58.7%)	0.053	
Work	12 (66.7%)	6 (33.3%)		
Education				
Low	29 (46%)	34 (54%)	0.954	
High	14 (46.7%)	16 (53.3%)		
Tooth Loss				
Anterior Tooth Loss				
≥ 1 teeth	27 (58.7%)	19 (41.3%)	0.017	2.0 (1.19 – 6.39)
0 - 1 tooth	16 (34.0%)	31 (66.0%)		
Posterior tooth Loss				
≥ 9 teeth	26 (57.8%)	19 (42.2%)	0,031	2.50 (1.08 – 5.76)
< 9 teeth	17 (35.4%)	31 (64.6%)		

Table 6 Regression model Quality of Life

Variables	B	P value	OR	95% CI OR
Aged	2.170	0.000	8.756	2.625 – 29.208
Anterior tooth loss	1.088	0.022	2.967	1.173 – 7.503
Constant	-2.335	0.000	0.097	

account for 5.9%.[12] Epidemiologic studies showed some related factors of oral health-related quality of life (OHRQoL) such as age, gender, loss of teeth, the socio-economic status, cultural background, dental stress, and smoking.[3,13] This study aims to determine the relationship between tooth loss and quality of life among elderly people Bojongnangka, Tangerang, Jakarta.

MATERIAL AND METHODS

A cross-sectional study was conducted among 93 respondents in five Integrated Coaching Center/Posbindu's (Pusat Pembinaan Terpadu) in Bojongnangka community health center (Puskesmas) Kelapa Dua sub-district, Tangerang since October-November 2016. Respondents asked to fulfill informed concern to participate in this study. The Indonesian version OHIP-14 questionnaire was administered to measure oral health-related quality of life (OHRQoL), and oral examination was performed to know a number of missing teeth on the same day. The questionnaire included questions about respondent's sociodemographic background such as age, gender, and education. There were 5 points scales (1-5) noted which higher scores indicate for worse OHRQoL. There were 7 dimensions measured in this study such as: functional limitation, trouble pronouncing words, worsened tasted, physical pain, moustache, discomfort of eating food, psychological discomfort, feeling self-conscious or feeling tense, physical disability, diet consumed unsatisfactory, interrupted meals, psychological disability, difficulty in relaxing, embarrassment, social disability, irritability, difficulty in doing usual job, handicap, lifeless satisfying, and function inability.

Responses to the items were recorded in a five-point scale: 0, never; 1, hardly ever; 2, occasionally; 3, fairly often; 4, very often. All 14 responses were summed to produce an overall OHIP score ranged from 0 to 56, with higher scores indicating poorer health-related quality of life.[1,14] The data collected was entered into SPSS statistical program version.[21] Chi-square test was conducted to determine the difference in frequencies. Backward multiple logistic regression analysis was carried out to determine variables that affect the quality of life. Ethical clearance was obtained from the Ethical committee of YARSI University prior to study.

RESULTS

Baseline Characteristics

A total of 93 elderly were included in this study. Eighty respondents were females (86%), and 14 were males (14%). Their ages ranged from 50 to 86 years with a mean of 62.3±6.6 years. Many of respondents had low education level (≤ 9 years) (67.7%). The respondent's characteristic is depicted in Table 1.

Tooth loss was varied from 1 to 28. Mean of tooth loss was 11.24 ± 7.4. The loss of anterior teeth varied between 0 (38.7%) to 12 (loss of all anterior teeth) account for 5.4%. Mean of anterior teeth loss was 2.72 ± 3.47. All subjects had posterior tooth loss (100%). Posterior tooth loss varied from 1 (4.3%) to 16 tooth loss (10.8%) while the mean posterior loss was about 8.52 ± 4.46 (Table 2).

Published by DiscoverSys | *Bali Med J* 2018; 7(3): 626-630 | doi: 10.15562/bmj.v7i3.1192

OHIP-14 consists of 7 domains where more than one-third (40.9%) of the participants had difficulty in pronouncing word/sentence and had a sense of taste worse (39.8%). In the domain of physical pain, one-third (34.4%) of subjects experienced pain in the oral cavity, and 37.7% had experience discomfort in chewing food. More than one-third (43%) of subjects had self-conscious, and 30.2% of subjects felt tense. In domains of physical discomfort, as many as 45.2% of subjects felt the food was unsatisfactory, and 37.6% often discontinue suddenly while eating. In psychological disability domain, 29.1% of respondents had difficulty to relax, and 37.6% of them felt embarrassed about losing their teeth. Only 14% of respondents felt irritable with other people, and 21.6% had difficulty doing usual jobs. Handicap, only 12.9% of respondents had lifeless satisfying, and 21.5% of subjects were unable to function (Table 3). In addition, about half of respondents had a good quality of life (51.6%) (Table 4).

Based on Table 5, there was a significant relationship between age and quality of life with (P = 0.000; OR 8.31). Quality of life had no significant relationships with gender, work status, and education (P < 0.05). In addition, there was a significant relationship between quality of life and tooth loss in both anterior and posterior tooth loss (P = 0.017; OR 2.0 and P = 0.031; OR 2.5). And from final regression model, we got that age was a strong indicator to quality of life with (P = 0.000; OR 8.76). Anterior tooth loss also influenced quality of life with (P = 0.022; OR 2.97)

DISCUSSION

The personal evaluation of the quality of life refers to what people think and how they feel about their lives. The characteristic of the sample revealed a predominance of women (86%), a result that is similar to that observed in other studies where women had higher life expectancy.[14,15] This fact may be explained by the longer life expectancy of women several countries.16 In addition, there is an increased frequency and participation of women in Integrated Coaching Center/Posbindu in Bojongnangka community health center. There was the fact that older people had no or low education (67.7%).

Oral diseases seriously impair the quality of life of participants, as we found in this study (see table 3. OHIP-14). The study conducted by Nikita et al. also found similar results where there was a difficulty in the pronunciation of words or sentences and feel unable to taste well among elderly.[17] It was also stated that oral disease might affect various aspect of life, including function, appearance, interpersonal relationship and even career opportunities.[18]

More than one-third (34.4%) of subjects experienced pain in the mouth. The result was similar with study conducted by Wardhana et al. stating that elderly prefer soft foods due to difficulty when eating hard foods and of causing pain in their oral cavity.[19] According to previous research by Khasanah et al., loss of teeth to be one disruption factor of temporomandibular joints causing pain.[20] Eliane et al. Also found that disruption of the temporomandibular joints will result in disruption of the neck muscles which is an integral part of the postural system.[21] Almost half of the subjects (49.5%) sometimes experienced discomfort in chewing foods associated with loss of teeth. Carl's explained that tooth loss for a long time would lead to changes in shape and bone density of the jaw and increasing bone volume which result in uncomfortable chewing food.[22] About 45.2% of subjects felt the food they consumed was unsatisfactory and as many as 37.6% of subjects often quit unexpectedly while eating. The result was supported by a study by Wardhana et al. which explained that tooth loss affected some elderly to choose food so that the food they consume was less than satisfactory.[19]

There was a significant relationship between age and quality of life in this study. People aged ≥ 60 years old had more risk of having bad quality of life compared to people aged < 60 years. This result was also supported by Wardhana et al. where quality of life disorders occur in elderly age 60-75 years (70%).[19] Besides, this study found that there was no significant difference between the quality of life in elderly between men and women, which was probably due to lack of sample and distribution of uneven samples. The result was accordance with study by Berutu and Dharmautama who found that there was no significantly different between quality of life and gender.[23]

Based on the result there was 63 low education elderly (those who did not finish junior high school) who had a poor quality of life. The result could be caused by only certain people attend school when they were still in school due to school was very rare. However, a study conducted by Berutu and Dharmautama found no significantly different between quality of life and education.[23]

In addition, the results showed that tooth loss had an impact on the elderly quality of life. The similar results also indicated by Wardhana which explained that loss of anterior and posterior teeth affected the quality of life among the elderly.[19] Oral health condition, as a result of anterior and posterior tooth loss, affects physical function and little psychological condition. The prevalence of total

tooth loss (edentulousness) varies widely among various communities, from 36% in New Zealand to 1% in a Japanese population.[24] The result strongly suggests that cultural and economic factors influence oral health care outcomes, as initially suggested by Davis.[24]

CONCLUSIONS

Both age and anterior tooth loss have effects on the oral health-related quality of life. Age and anterior tooth loss variables were a strong influence factors in the quality of life among elderly. Besides, there was no significant difference between the quality of life in elderly with gender, work status, and level of education.

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