

Research Report

Oral hygiene and number of oral mucosal lesion correlate with oral health-related quality of life in elderly communities

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ABSTRACT

Background: Quality of life assessment mostly is based on general health. Deterioration of physiologic condition, polypharmacy and the high occurrence of chronic disease in elderly may manifest in oral cavity that can affect oral function, in turn it will affect quality of life of elderly. **Purpose:** This study was aimed to determine the correlation of oral health status and oral health-related quality of life (OHRQoL) in elderly communities of Yogyakarta city. **Method:** Seventy three elders were subjects of this study. Data of OHRQoL and oral health status were obtained from modification of questionnaire of Dental Impact of Daily Living (DIDL) Index and from intraoral examination, respectively. Intraoral examination comprised oral mucosal lesion amount, oral hygiene, DMFT index and periodontal tissue status. The data then were analyzed statistically using Pearson Product Moment Correlation. **Result:** The results showed that mean of DMFT index was 16.9 and 63% of subjects were found with gingivitis, most subject had moderate oral hygiene and each subject at least had two oral mucosal lesions. Mean score of quality of life was 27.2 and classified as satisfying. Oral hygiene and number of oral mucosal lesion had correlation with OHRQoL with r were -0.236 (Sig. : 0.045) and -0.288 (Sig. : 0.013), respectively. **Conclusion:** The study suggested that oral hygiene and number of oral mucosal lesion correlate with oral health related-quality of life in elderly communities of Yogyakarta city.

Key words: Oral health, quality of life, elderly

ABSTRAK

Latar belakang: Penilaian kualitas hidup terutama didasarkan pada kesehatan umum. Memburuknya kondisi fisiologis, polifarmasi dan tingginya kejadian penyakit kronis pada lansia dapat termanifestasi di dalam rongga mulut sehingga dapat mempengaruhi fungsi mulut yang pada gilirannya akan mempengaruhi kualitas hidup lansia. **Tujuan:** Penelitian ini bertujuan untuk meneliti hubungan antara status kesehatan mulut dan kualitas hidup berdasarkan kesehatan mulut pada masyarakat lanjut usia di kota Yogyakarta. **Metode:** Tujuh puluh tiga lansia sebagai subjek dalam penelitian ini. Data kualitas hidup berdasarkan kesehatan mulut dan status kesehatan mulut diperoleh dari modifikasi kuesioner Indeks Dampak Kesehatan Gigi terhadap Kehidupan Sehari-hari dan dari pemeriksaan intraoral. Pemeriksaan intra oral terdiri atas jumlah lesi mukosa rongga mulut, kebersihan mulut, indeks DMFT dan status jaringan periodontal. Data kemudian dianalisis secara statistik menggunakan Pearson product moment correlation. **Hasil:** Hasil penelitian menunjukkan bahwa rata-rata indeks DMFT adalah 16,9 dan 63% subjek ditemukan dengan gingivitis, subjek rata-rata memiliki kebersihan mulut yang cukup dan setiap subjek rata-rata memiliki dua lesi mukosa mulut. Rerata kualitas hidup berdasarkan kesehatan mulut adalah 27,2 dan tergolong memuaskan. Kebersihan mulut dan jumlah lesi mukosa mulut memiliki korelasi dengan kualitas hidup berbasis kesehatan rongga mulut dengan masing-masing r adalah -0,236 (Sig. : 0,045) dan -0,288 (Sig. : 0,013). **Simpulan:** Dapat

disimpulkan bahwa kebersihan mulut dan jumlah lesi mukosa mulut berkorelasi dengan kualitas hidup berbasis kesehatan rongga mulut pada masyarakat lanjut usia di kota Yogyakarta.

Kata kunci: Kesehatan mulut, kualitas hidup, lansia

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INTRODUCTION

Proportion of elderly (older than ≥ 60 years) worldwide dramatically increased recently. The reasons for this is increasing of life expectancy because of quality of life improvement and development of health aspect.¹ Problems of elderly health are various either as results of physiologic or pathologic process. To cope with those problems, the best thing to do is improving quality of life of elderly by giving an adequate health management. So far the quality of life assessment is mostly based on general health of people. Quality of life itself can not be separated from the whole condition of human being that consists of general and oral health. Deterioration of physiologic condition, polypharmacy and the high occurrence of chronic disease in elderly may manifest in oral cavity that can affect oral function.

Health and function of mouth deteriorate as long as getting older.² Several oral findings could be detected in elderly population. All these findings would give badly impact for daily life of elderly. However, maintenance of oral health is still ignored by elderly. The ignorance of oral health results in decreasing of self confidence and social life that eventually affect the quality of life. Research correlated between oral health and oral health-based quality of life in elderly is essential to conduct in Indonesia since Indonesian population can be categorised into old structure because of the percentage of elderly has reached up to 7%. Yogyakarta is a province in Indonesia with the highest amount of elderly (13.20%).³ Yogyakarta is a city with the longest life expectancy in Indonesia, so many elderly communities grow rapidly here. The community is a place for elders to share ideas, thoughts and is a pleasure place to intensively communicate each other with a goal to get a better quality of life.

To assess quality of life is something so difficult since concept of quality of life is elusive and abstract. Quality of life assessment is full of life values.⁴ There are many parameters to assess the quality of life related to elderly. However, from 20 instruments available, only 7 instruments meet with criteria of measurement, quantification and qualification including DIDL.⁵ In fact, parameters used in those instruments are not always suitable if applied in every country. Therefore, in this study DIDL parameters⁶ has been modified based on the preliminary study. Dental Impact of Daily Living was chosen since the alternative statements

given in this index is easier to be understood compared with other indexes that usually using Likert scale.

The aim of this study was to determine the correlation between oral health status and oral health related quality of life in elderly communities of Yogyakarta city. The significance of this study were: (a) giving inputs to competent institutions to increase the elderly health management based on the oral disorders found in this study; (b) can be used as a basic reference for the oral health related quality of life studies in elderly.

MATERIALS AND METHODS

Seventy three elderly from five elderly communities (Gowongan, Tegal Panggung, Danurejan, Suryatmajan and Universitas Negeri Yogyakarta) in Yogyakarta city were subjects of this study. The subjects received intraoral examination to observe: the number of oral mucosal lesion, periodontal tissue condition using modified Periodontal Index from Russel, general oral hygiene and DMFT index (dental caries/decay, missing and restored teeth). All data were recorded in Oral Health Status Form. Assessment of quality of life based on modified DIDL was performed and recorded in OHRQoL Form. Principally, DIDL is an instrument to describe the quality of life based on perception towards oral health. There are 36 alternative statements that can be met with the perception of oral health. Someone should judge the statements with "yes" or "no". The score of quality of life is determined by amount of score that should be had by someone with satisfied quality of life. The total score of the statements determines grading of OHRQoL with the following classifications: (a) score of 25-36 is satisfied; (b) score 13-24 is relative satisfied; and (c) score 1-12 is unsatisfied.

The data were descriptively and statistically analysed using **Pearson Product Moment Correlation test** to determine the correlations between independent variables (number of oral mucosal lesion, oral hygiene, periodontal tissue condition, DMFT index) with dependent variable (oral health related quality of life). If the correlation existed, so the simple linier regression analysis was conducted with CI = 95% ($\alpha = 0.05$) to determine the influence of independent variables towards dependent variable or to determine the correlation using software of SPSS of 16 version.

RESULTS

This study involved 73 elderly from five elderly communities (Gowongan, Tegal Panggung, Danurejan, Suryatmajan and Universitas Negeri Yogyakarta) in Yogyakarta city. The subjects consisted of 11 males and 62 females aged 61-80 years. Fifty three subjects with educational qualification of less than senior high school and twenty subjects with that of higher than senior high school. Seventy subjects were married and the other three were unmarried. Seventy one subjects were Javanese and the other two were other ethnics. Sixty seven subjects were independent for activity daily living (ADL) and the other six required some help when doing ADL. Occupational backgrounds were house wife (30 subjects), merchant (4 subjects), employee (4 subjects), retired (25 subjects), entrepreneur (4 subjects) and others (6 subjects). The results of oral health examination can be demonstrated on Table 1.

According to Table 1, it was clear that 82% of elders had oral mucosal lesion. In this study, *fissured tongue* is the most found lesion, 51% of all elders with this lesion. Other oral mucosal lesions found in these subjects were ulcerative lesions (20.5%), keratosis (17.8%), coated tongue (8.2%) and other lesions (2.5%).

Table 1. Summary of intraoral examination from all subjects

Aspects	No. of subjects	Percentage	Mean
Oral mucosal lesion :			2.02
- Present	60	82%	
- Absent	13	18%	
Oral Hygiene :			
- Good	14	19%	
- Fair	47	64%	
- Poor	12	16%	
Periodontal tissue :			
- Healthy	13	18%	
- Gingivitis	46	63%	
- With tooth mobility	14	19%	
DMFT Index			16.9
Score of OHRQoL			27.2

Table 2. Summary of correlation analyses between oral hygiene, number of oral mucosal lesion, DMFT and periodontal status with OHRQoL in all subjects

	Oral hygiene	Σ of oral mucosal lesion	DMFT	Periodontal tissue
Coefficient Correlation of Pearson (r)	-0.236	-0.288	-0.026	-0.066
P-value (Sig)	0.045	0.013	0.828	0.580
Conclusion	Weak correlation and negative	Weak correlation and negative	No correlation	No correlation

From linear regression analysis of variables with correlation i.e. oral hygiene and number of oral mucosal lesion, the following equations were obtained: $\hat{y} = 29,451 - 2,337x$ (\hat{y} = OHRQoL and x = oral hygiene) dan $\hat{y} = 29,418 - 1,500x$ (\hat{y} = OHRQoL and x = number of oral mucosal lesion).

The mean score of DMFT index in all subjects was 16.9. These indexes were categorized as moderate to high, since classification of DMFT index i.e. DMFT index >13.9 is high and 9.0-13.9 is moderate.¹¹ In this study, there was no correlation between DMFT index with quality of life (Table 2).

DISCUSSION

Although the status of oral health of elderly generally was not good enough (Table 1), however, they had satisfying quality of life. This results probably were affected by aging concept. In this concept, principally elderly will sincerely accept this decreasing condition that is assumed as natural process and it always happens for all elders.⁷ This concept makes elderly never look for solution and it does not much influence the quality of life perception. One thing needs to be considered is parameters or indicators used to assess the status of oral health. On the other hand, validity for quality of life measurement is difficult to determine. So far, instruments used to measure quality of life is determined by professionals based on their own standard and definition. Whereas perception of quality of life is subjective and what someone deems that it is important for his/her life, not always true for someone else.⁸

The result showed on Table 1 was supported by a finding that fissured tongue is the most common tongue condition (5.24%) compared to other tongue abnormalities.⁹ On the other hand, another study also found that fissured tongue was the most common tongue lesion diagnosed in 11.5% of the subjects comprised of 2,000 dental out patients that have been screened for tongue lesions.¹⁰ The older someone the more fissured tongue may be found that might be caused by reduction of elastic fibers in oral tissue. This lesion is benign and does not need special treatment, only required to increase tongue hygiene.¹⁰

Table 2 results was not in line with the previous study that found there was a weak correlation between DMFT index with quality of life measured by WHOQOL-OLD with $r = 0.135$ and with mean score of DMFT was 15.24.¹²

There was a strong correlation between oral hygiene and OHRQoL with $r = -0.236$ (Table 2) and it was highest correlation compared to other correlations, so it indicated that role of oral hygiene as a contributory factor for OHRQoL is essential. That is why education and information about oral hygiene for frail elders should be intensified, since many oral diseases are originated from bad oral hygiene. Bad oral hygiene in elderly is life-threatening condition since it may indirectly cause malnutrition and dehydration,¹³ brain abscess,¹⁴ arthritis,¹⁵ cardiovascular disease^{16,17} and pneumonia¹⁸ those are originated from periodontal disease. This statement was supported by studies at many institutions of elderly in Scotland.¹⁹ They found that majority of elders had bad oral hygiene especially elders with denture, even the denture wearers suffered from denture-induced pathology. By regularly increasing of oral hygiene in institutionalised elderly can minimise incidence of pneumonia.²⁰

The two most oral diseases are dental caries and periodontal disease. These two diseases are originated from bad oral hygiene. It is assumed that development of dental plaque is faster in elderly compared to young people.¹³ One contributory factor for this bad oral hygiene is xerostomia, since the prevalence of xerostomia in elderly is higher than in young people.²¹ It is caused as well by systemic disease and side effect of medication.²² About 500 medications of 42 categories contribute to xerostomia in elderly.²¹

In this study not all indicators had correlation with OHRQoL. Only number of oral mucosal lesions and oral hygiene correlated with OHRQoL. It is need to be studied further whether these indicators above are representative enough to asses OHRQoL. Probably, needs a study to determine standard indicators that are representative to assess OHRQoL for each population. According to systematic review carried out towards 1.726 articles about OHRQoL, only four studies showed significant correlations between oral health status with OHRQoL.²³ So, it is clear that currently no adequate instrument available for oral health assessment. The results met with Locker's idea that quality of life was elusive and abstract. Assessment of quality of life was full of life values in which vary for each person.⁴ Quality of life is a perception of life related with culture and rules that it is suitable with a place where someone lives and associated with aim, expectation, standard and care of life.¹¹

In this study was observed also that hypertension, diabetes mellitus and gastritis were the three most found systemic diseases/conditions in elders. The occurrence of diabetes mellitus itself may be associated with effect of bad oral hygiene that leads to high prevalence of periodontal disease. Periodontitis is more common and severe among patients with diabetes mellitus type-2 than healthy patients.²⁴

It was assumed that diabetes mellitus type-2 might initiate or worsen periodontitis and vice versa. A study support that appropriate treatment for periodontitis will improve glycemic control in diabetes mellitus type-2 patients.^{25,26} Oral hygiene itself can be caused by decreasing of oral self cleansing that it can be associated with xerostomia. It is well known that many antihypertension medications have xerogenic effect.^{27,28}

From above discussion can be withdrawn some points as follows. Although the OHRQoL of both group of elders could be still categorised satisfying, however, based on the oral findings in this study, improvement of elders' condition was compulsory since oral condition can affect general health. Someone with oral problems tend to consume soft and non-fibre foods that make inadequate nutritional fulfillment. Finally, it can be correlated with stroke and malignant risks.^{17,29} Dentist and dental hygienist should be recruited as part of elderly health team. Almost majority of oral problems come from bad oral hygiene. Besides that, bad oral hygiene makes someone prone to oral infection that can be focal infection for other parts of body. Therefore, communication, information and education about oral hygiene is very essential and need to be intensified that it expectedly may increase oral health-based quality of life in elders.

There are two main suggestions arised from this study i.e.: (a) it needs to create an instrument for OHRQoL measurement that it is suitable for Indonesian elders; (b) it needs to create standard parameters to determine oral health status for Indonesian elders. The study suggested that oral hygiene and number of oral mucosal lesion correlate with oral health related-quality of life in elderly communities of Yogyakarta city.

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