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研究題目：Relationship between dentition status and activities of daily living in the Indonesian institutionalized elderly

Objectives：

There are very few studies available regarding the oral health of the elderly in Indonesia, especially those living in institutions. The aim of this study was to evaluate the relationship between dentition status and activities of daily living（ADL）of the Indonesian institutionalized elderly

Methods：

The study was conducted on 163 elderly subjects（134 females and 29 males）in 5 private nursing homes in Jakarta, Indonesia. Questionnaire regarding socio-demographic information and oral health behavior was administered through an interview. Subjects were examined by a registered physician for their systemic ailments. Dentition status assessed were numbers of teeth present and Functional Tooth Units（FTUs）（Fig.1). The total numbers of FTUs were defined aspairs of opposing natural teeth orprosthesis（fixed or removable dentures). The ADL levels were evaluated using 2 indexes；modified 20-point Barthel Index（BI）and the Lawton Instrumental Activities of Daily Living（IADL). The study protocol was approved by research ethics committee in Faculty of Dentistry, University of Indonesia, and Tokyo Medical and Dental University. Prior to the study, informed consent was obtained from each home and individual.

Differences in mean values between two groups were analyzed by Mann Whitney U-test. The relationships of thenumbers of teeth present and FTUs with ADL were evaluated using ANCOVA adjusted for age, gender, marital status, level of education,and numbers of systemic ailments.

Results：

The majorities of subjects（82.2%）were females. The age distribution was as follows：60 − 74 years（51.5%）；75 years or above（48.5%). The mean age of subjects was 74.1 ± 8.6 years（range 60 − 93 years). Almost half of subjects（49.7%）had a low level of education（primary school or lower）and 50.3% had a higher education（junior high school or above).

Medical examination or records revealed 88.0% of subjects had at least one systemic ailment. The assessment based on BI showedthat almost half of subjects（47.8%）were independently able to perform all 10 basic activities of daily living, 47.2% were partially

dependent and 4.9% were totally dependent in performing these activities. The mean score of BI was 18.2 ± 3.0and the most difficult activity was climbing stairs. IADL showed that 35.0% of subjects needed help in performing 8 more complicated activities. The mean score of IADL was 10.3 ± 3.0 and the most difficult activity was handling oftheir own finances.

Overall, 31 subjects (19%) were edentulous.Almost half of the edentate did not wear dentures (48.4%). Among dentate subjects, 81.0% had missing teeth with no prosthetic replacements. The mean number of teeth present of all subjects was13.9 ± 11.2. Proportion of teeth present was higher in anterior teeth than posterior teeth. The proportions of group divided by the number of teeth present were as follows : 0-9 teeth (43.6%), 10-19 teeth (19%), and 20-32 teeth (37.4%), and thosedivided by the number of FTUs were as follows : no FTUs (34.4%), 1-11 FTUs (33.1%), and 12-22 FTUs (32.5%). ANCOVA results showed that subjects who had 20 or more teeth present had significantly higher scores of BI andIADLcompared to those who had 0-9 teeth.Similarly, those who had 1-11 numbers of FTUs had significantly higher scores of BI andIADLcompared to those without FTUs (Table 1).

Discussion :

The proportion of males and females (17.8% and 82.2%) in this study sample were not similar tothe general Indonesian elderly (44.9% and 55.1%). Thus nursing homes in Indonesia are predominantly occupied by elderly females. Besides, most of them were in medically compromised situation.

Current subjects showed a high proportion of missing teeth and very low proportion of filled teeth. From questionnaireinterview, almost one-third of subjects never visited a dentist in their entire lifespan for various reasons. Not only prevention but curative and rehabilitative interventions were needed in this population, because their awareness is still very low and the barriers seeking dental treatment may exist.

Numbers of teeth present and FTUs were higher in the elderly who were independent in performing activities of daily living (BI and IADL index). Subjects with 1-11 FTUs showed better ADL compared with those with no FTU. This indicated that maintaining at least one occluded tooth pair was very important. Therefore FTUs was considered an indexrelevant to definefunction and distribution of teeth and masticatory ability. These resultsare consistent with previous studies that showed subjects with 20 or more remaining teeth or those with more posterior occluding pairs had better physical ability to perform work and other daily activities.

Tooth loss in general can affect the eating habits of elderly subjects, cause alteration of their nutritional status, and deterioratetheir general health.In the end,it indirectly affects their physical ability in performing activities of daily living. This study, consistent with previous studies, suggeststhat preservation of natural dental occlusion and rehabilitation of masticatory function by the use of dental prosthesis may prevent the decline of physical functional ability

in elderly individuals.

Subjects in this study had poor oral health and low number of teeth present and FTUs, this should be a major concern in the aged.The Indonesian elderly population reached 9.8% of total population. The burden of oral health problem in the elderly will continue to grow. This study showed significant relationships between numbers of teeth present, FTUs and ADL. Activities of daily living scores were better when subjects had the higher number of teeth present, particularlyretaining 20 or more teeth. Therefore, retaining natural teeth as many as possible and the importance of recovering oral function through dental prosthetics to maintain FTUs should be emphasized in this special population in order to promote quality of life in older age.

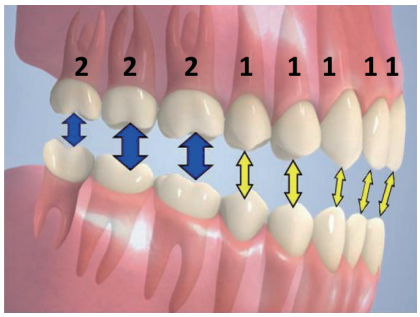


Fig 1. FTUs scoring system; posterior occluded tooth pair scored as 1 FTU and anterior occluded tooth pair scored as 2

Table 1 BI and IADL scores by three categories of numbers of teeth present and FTUs

Outcome variable	Independent variable		N	Mean	Adjusted mean	p value
BI	Teeth present	0-9	71	17.32	17.51	0.037 *
		10-19	31	18.42	18.53	
		20-32	61	19.13	18.87	
	FTUs	0	56	17.34	17.38	0.028 **
		1-11	54	18.93	18.79	
		12-22	53	18.40	18.49	
IADL	Teeth present	0- 9	71	8.44	9.10	0.009 *
		10-19	31	10.48	10.79	
		20-32	61	12.25	11.32	
	FTUs	0	56	8.79	9.08	0.022 **
		1-11	54	11.46	11.10	
		12-22	53	10.57	10.62	

Adjusted for age, gender, education, marital status, and number of systemic ailments
* Significant difference between 0-9 teeth group and 20-32 by post hoc test of ANCOVA
** Significant difference between 0 and 1-11 by post hoc test of ANCOVA

Research Achievement :

1. These research findings will be presented with title : "Dentition status and activities of daily living inthe Indonesian institutionalized elderly" as oral presentation in International session program at 60th general meeting of Japanese Society for Dental Health, May 19th– 21st 2011 : Chiba, Japan.