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Research Title：Social capital, socioeconomic status, and oral health status in Indonesian young people

Objective：

Oral health shares many of the same risk factors and determinants as other chronic diseases such as cardiovascular disease, chronic respiratory disease, and diabetes. Although many previous studies has been focused on the behavioral risk factors underlying oral health and other chronic diseases（e.g. smoking, alcohol drinking, and unhealthy diet intake), there has been relatively less research focused on the social factors of oral health.

Oral health is one of biggest concerns among young people in developing countries. Dental caries for young people in developing countries have been increasing constantly and periodontal disease in young populations is more common in developing than in developed countries. The dominant oral health preventive model has evolved from the biomedical nature of dentistry and individual risk factors based on clinical oral epidemiology. It has been increasingly recognized that this approach alone will not be effective in achieving sustainable oral health improvements across the population. Understanding of the association between oral health and social factors including social capital could contribute to further improve oral health.

The objective of this study was to investigate how oral health status was associated with social factors such as social capital and socioeconomic status among Indonesian young people.

Methods：

Study sample

The setting of our study is Makassar, a mid-sized city in Indonesia（population 1,300,000). The sample of our study consisted of first-year students enrolled at the Makassar University. Makassar University had fourteen faculties. Five of six departments in one faculty（Engineering）agreed to take part in the survey, representing 715 students. Of these, 392 students responded to the survey. After participants with missing values were excluded, the data of 232 students（141 men and 91 women, mean age 18.4±0.8 years）were analyzed. The study was approved by Kyushu University Institutional Review Board for Clinical Research.

Oral examination

The number of decayed, missing and filled teeth（DMFT）and community periodontal Index（CPI）were recorded according to WHO criteria.

Questionnaire

Social capital, socioeconomic status including education level of parents and household income per year, and oral health behaviors were evaluated by self-administered questionnaire.

We inquired about perceptions of social capital in the family, neighborhood, and high school settings. Family social capital was assessed by the question : 'Did you feel your family understood and gave attention to you during high school?' Neighborhood social capital was assessed by using two questions ; 'Did you feel people trusted each other in your neighborhood during high school (neighborhood trust) ?' 'Did you feel that your neighbors stepped in to criticize someone's deviant behavior during high school (informal social control) ?' School social capital was assessed by three questions ; 'Did you feel teachers and students trusted each other in your high school (vertical school trust) ?' 'Did you feel students trusted each other in your high school (horizontal school trust) ?' 'Did you feel students collaborated with each other in you high school (reciprocity at school) ?' The answer options were : 'strongly agree' ; 'agree' ; 'neither agree or disagree' ; 'disagree' ; 'strongly disagree'. Then, the 'neither agree or disagree', 'disagree' and 'strongly disagree' responses were combined to create a dichotomous variable indicating lower group.

Results and Discussion :

Characteristics of the study participants are illustrated in Table 1. The mean DMFT was 4.8 ±2.7 and highest quartile of DMFT (≥3) was defined as high experience of dental caries. High family social capital was significantly associated with high experience of dental caries. The prevalence of periodontal disease (defined by CPI code ≥3) was 20.3%. Periodontal disease was significantly associated with low education level of father and mother.

Table 1. Characteristics of the study participants by dental caries and periodontal disease

	All	Dental caries high experience (DMF ≥6)			Periodontal disease (CPI code ≥3)		
	n	n	%	p-value	n	%	p-value
Household income category per year				0.172			0.214
≥2880$	100	38	38.0		15	15.0	
1440-2879$	43	16	37.2		11	25.6	
<1440$	89	23	25.8		21	23.6	
Father education level				0.070			0.004
University	125	48	38.4		22	17.6	
High school	73	23	31.5		11	15.1	
Elementary/junior high school	34	6	17.6		14	41.2	
Mother education level				0.060			<0.001
University	103	42	40.8		17	16.5	
High school	76	23	30.3		9	11.8	
Elementary/junior high school	53	12	22.6		21	39.6	
Family social catpital				0.017			0.277
High	207	74	35.7		44	21.3	
Low	25	3	12.0		3	12.0	
Neighborhood trust				0.724			0.200
High	213	70	32.9		41	19.2	
Low	19	7	36.8		6	31.6	
Informal social control				0.517			0.088
High	181	62	34.3		41	22.7	
Low	51	15	29.4		6	11.8	
School trust (vertical)				0.499			0.540
High	212	69	32.5		44	20.8	
Low	20	8	40.0		3	15.0	
School trust (horizontal)				0.886			0.799
High	210	70	33.3		43	20.5	
Low	22	7	31.8		4	18.2	
Reciprocity at school				0.279			0.345
High	221	75	33.9		46	20.8	
Low	11	2	18.2		1	9.1	

The association of social factors and oral health status was examined in stepwise logistic regression model with backward elimination as follows ; 1) model including socioeconomic status such as household income and parents education level and 2) model including socioeconomic status and social capital indicators.

When the association between socioeconomic status and oral health status was examined, students with low education level of mother were less likely to experience dental caries (odds ratio [OR] 0.42, 95% confidence interval [CI] : 0.20-0.89) (model 1 in Table 2).

	All	Dental caries high experience (DMF ≥6)			Periodontal disease (CPI code ≥3)		
	n	n	%	p-value	n	%	p-value
Gender				0.098			0.631
Men	141	41	29.1		30	21.3	
Women	91	36	39.6		17	18.7	
Toothbrush frequency				0.781			0.704
≥3 times	26	8	30.8		41	19.9	
≤2 times	206	69	33.5		6	23.1	
Dental floss use				0.268			0.835
Yes	42	17	40.5		9	21.4	
No	190	60	31.6		38	20.0	
Current smoking				0.212			0.822
No	195	68	34.9		39	20.0	
Yes	37	9	24.3		8	21.6	

Table 2. Odds ratio (OR) for high experience of dental caries

	Model 1 OR (95%CI)	Model 2 OR (95%CI)
Mother education level		
University	1	
High school	0.61 (0.32-1.14)	
Elementary/junior high school	0.42 (0.20-0.89)	
Family social capital		
High		1
Low		0.25 (0.07-0.88)
The number of sweet food intaking every day	0.84 (0.70-1.01)	0.85 (0.71-1.03)

Table 3. Odds ratio (OR) for periodontal disease

	Model 1 OR (95%CI)	Model 2 OR (95%CI)
Mother education level		
University	1	1
High school	0.68 (0.29-1.62)	0.61 (0.25-1.46)
Elementary/junior high school	3.32 (1.56-7.08)	3.39 (1.56-7.35)
Neighborhood trust		
High		1
Low		2.68 (0.87-8.29)
Informal social control		
High		1
Low		0.33 (0.12-0.89)

On the other hand, students with low education level of mother were more likely to have periodontal disease (OR 3.32, 95%CI : 1.56-7.08)(model 1 in Table 3). Indonesian students with low education level of mother had less dental caries and more periodontal disease than those with high education level. This finding suggested that students with low education level of mother took less sweet food than those with high education of mother, because of low income.

Including social capital indicators in logistic regression models, low family social capital and informal social control was negatively associated with dental caries and periodontal disease. Family social capital and informal social control had an adverse effect on oral health.

Presentation :

Aisyah Ahmad, Michiko Furuta, Yuka Okabe, Kenji Takeuchi, Seiji Nakamura, Yoshihisa Yamashita. Association between parents' education level and oral health status in Indonesia young people. The 64th general meeting of Japanese Society for Oral Health. May 27-29, 2015 (presentation plan)