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Original Research

Relationship between Dental Caries Prevalence and Elderly's Quality Of Life

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Abstract

Introduction: Tooth loss is experienced by the elderly as age increases the function of the oral cavity and the status of the oral cavity is closely related to physical, mental and social health. Physical and mental health has an impact on quality of life that will affect social interaction which ultimately impacts on the quality of life of the elderly. This study aimed to identify the relationship between dental caries and quality of life influenced by oral and dental health in the elderly. **Methods**: This study used cross sectional analytical method. Ninety-one respondents aged 45-90 years old were examined. The process of collecting data was done usinh the dental and oral health status of the WHO. To see the quality of life of elderly people, WHOQOL-BREF was used. Both types of data obtained were processed using statistical analysis to see the correlation. **Results**: Cross tabulation between the decay index and the quality of life of the physical domain of the respondents showed 1.31 higher risk to have poor physical health compared to those with low decay index (OR=1.31). In the domain of psychological health, respondents with high decay index had a 1.12 higher risk of having poor psychological health (OR=1.12). DMF index in the elderly with the social relations domain showed 1.50 higher risk for having a poor social relationship (OR=1.50). **Conclusion**: Elderly people with high DMFT index do not reduce quality of life, but quality of life will decrease if oral and dental health decreases.

Keywords: *aged, dental care for aged, dental caries, quality of life.*

Introduction

Dental and oral disease is a common disease suffered by people in the world. Both children and adults, including the elderly. When it reaches old age, there are many physiological and pathological changes in the body, which can have an impact on dental and oral health, both directly and indirectly. With all the changes that occur, resolving dental and oral health problems becomes a new challenge for health practitioners in the world[1,2].

The quality of life itself is inseparable from the overall human condition consisting of general and oral health. The worsening of physiological conditions, polypharmacy and the high incidence of chronic diseases in the elderly can manifest in the oral cavity which can affect oral function, getting older, health conditions and oral cavity getting worse[3,4].

A study conducted in developed country showed chronic abnormalities in oral disorders that are often experienced by the elderly are tooth loss, dental caries and periodontal disease. Pain, disruption of the function of chewing and infection are symptoms of oral disease which can reduce the quality of life of the elderly. The negative impact of poor oral health on the quality of life of the elderly is an important public health problem. In

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the whole world, poor oral health in the elderly is mainly seen in the presence of dental caries[5].

Caries and dental and oral health problems in the elderly are chronic, such as dental caries, tooth loss and periodontal disease[6]. Caries is disease that mainly occurs in the elderly. The opening of root surfaces accompanied by health status and the use of various drugs make the elderly at high risk for caries. Symptoms of oral disease include pain, infection and disruption of chewing function which can reduce the quality of life in the elderly[7].

Elderly people with dental caries are more prominent because of physiological disorders, resulting in disruption of the function of mastication and jaw joints, and disruption of the enjoyment of life. The sharp increase in cases of tooth loss based on age groups illustrates that dental health efforts to maintain teeth as long as possible in the oral cavity have not been implemented well[8]. Likewise, the handling of oral dental diseases generally tends only to dental diseases, not comprehensive and holistic, which includes promotive, preventive, curative, and rehabilitative, aimed at all age groups[9].

Subjects and Method

This study used a cross sectional method. Respondents of this study were 91 elderlies who were randomly selected (simple random sampling) at the Surabaya Health Center. Examination of the quality of life score using the WHOQOL-BREFI questionnaire with question items using four domains, i.e. physical, psychological, social relations, and environment. Oral health examination was carried out using the WHO method. The number of dental caries was recorded and correlated with the data obtained from the questionnaire. The data obtained were processed and cross-tabulated using the SPSS application. The correlation analysis was cross-tabulated using Odds Ratio.

Findings

Out of a total of 91 elderly respondents, the majority were 60-74 years old (69.23%), male (32.97%) with final education below junior high school (57.14%), and some the number of respondents did not work (90.1%). The highest rate of caries was found in respondents aged 75-90 years (16.38) and most tooth loss also occurred at the age of 75-90 years (12.69).

The highest mean DMF was in respondents male sex (15.93). The lower the level of education, the higher the DMF index (16.265). The DMF index in the elderly who did not work (15.07) was higher than the average working elderly (Table I).

Table I. Average index of tooth decay, missing, and filling based on demographic characteristics

Characteristics	D	M	F	DMF
Age (years)				
45-59	5.67	5.00	0.25	10.92
60-74	5.25	9.83	0.16	15.08
75-90	3.25	12.69	0.44	16.38
Sex				
Male	4.40	11.77	0.10	15.93
Female	5.23	8.67	0.28	14.18
Education Level				
<middle school	5.585	10.81	0.085	16.265
>middle school	4.245	7.89	0.575	12.715
Working status				
Working	6.33	5.56	0	11.89
Unemployed	4.80	10.15	0.24	15.07

Table legends: D= Decayed, M= Missing, F= Fillings

Table II shows that older people who have systemic disease have a higher chance of having a lower quality of life related to the level of dental caries than the those who do not have systemic disease. Respondents with a high DMF index had 1.49 times higher risk of having a bad mastication function compared to those with a low DMF index. There was no significant difference between the variable of self-confidence and the high DMF index compared to the low DMF index (Table III).

Table II. Correlation of quality of life with the DMF index

Variable	n	Quality of Life											
		Affected by systemic disease						Not affected by systemic disease					
		Speech function		Mastication function		Confidence		Speech function		Mastication function		Confidence	
		Poor	Good	Poor	Good	Poor	Good	Poor	Good	Poor	Good	Poor	Good
>13	45 (49.45%)	9 (49.45%)	8 (47.05%)	11 (64.70%)	6 (35.29%)	0	17 (100%)	13 (76.47%)	4 (23.52%)	13 (46.45%)	15 (53.57%)	3 (10.71%)	25 (89.29%)
≤ 13	46 (50.55%)	2 (20%)	8 (80%)	6 (60%)	4 (40%)	2 (20%)	8 (80%)	11 (50.56%)	8 (80%)	11 (50.56%)	23 (65.89%)	6 (16.67%)	20 (83.35%)
> 3	43 (47.25%)	7 (50%)	7 (50%)	9 (56.25%)	7 (43.75%)	0	16 (100%)	9 (35.35%)	16 (100%)	9 (35.35%)	16 (59.26%)	3 (11.11%)	24 (88.89%)
≤ 3	48 (52.75%)	3 (27.7%)	3 (27.7%)	8 (72.73%)	3 (27.27%)	2 (18.18%)	9 (81.82%)	14 (57.84%)	9 (81.82%)	14 (37.84%)	22 (59.46%)	6 (16.22%)	31 (85.76%)
M>7	42 (46.15%)	8 (50%)	8 (50%)	8 (50%)	8 (50%)	2 (18.18%)	16 (100%)	11 (42.31%)	16 (100%)	11 (42.31%)	15 (57.69%)	2 (7.69%)	24 (92.31%)
M ≤7	49 (53.85%)	3 (27.27%)	8 (72.73%)	3 (27.27%)	8 (72.73%)	2 (18.18%)	9 (81.82%)	13 (34.1%)	9 (81.82%)	13 (34.1%)	26 (68.42%)	7 (18.42%)	31 (83.58%)
F>0	12 (13.18%)	2 (50%)	2 (50%)	3 (75%)	1 (25%)	0	4 (100%)	2 (25%)	4 (100%)	2 (25%)	5 (62.50%)	0	8 (100%)
F =0	79 (86.82%)	9 (39.13%)	14 (60.8%)	14 (56%)	9 (44%)	2 (8.70%)	21 (91.30%)	23 (42.07%)	21 (91.30%)	24 (41.07%)	32 (57.14%)	9 (16.09%)	47 (83.93%)

Table III. Correlation between dental caries level and speech function, function of mastication, and selfconfidence.

Index	Odss Ratio		
	Speech	Mastication	Self-Confidence
DMF	2.26	1.49	0.32
D	1.70	0.94	0.37
M	0.55	1.02	0.22
F	0.77	1.13	0.77

Table legends: DMF Index, D= Decayed, M= Missing, F= Fillings.

Cross tabulation between the decay index and the quality of life of the physical domain of the respondents showed 1.31 higher risk to have poor physical health compared to those with low decay index (OR=1.31). In the domain of psychological health, respondents with high decay index had a 1.12 higher risk of having poor psychological health (OR=1.12). In addition, the DMF index in the elderly with the social relations domain showed 1.50 higher risk for having a poor social relationship (OR=1.50), as shown in Table IV.

Table IV. Correlation between the level of dental caries and the quality of life of the elderly.

Index	Odss Ratio			
	Quality of Life			
	Domain 1 Physical Health	Domain 2 Psychological Health	Domain 3 Social Relation	Domain 4 Environment
DMF	0.73	0.55	1.50	2.62
D	1.31	1.12	1.32	7.62
M	0.55	0.35	1.39	1.61
F	0.77	0	0.85	0

Table legends: DMF Index, D= Decayed, M= Missing, F= Fillings.

Dental caries is strongly influenced by habits in maintaining dental and oral health. Dental caries may have an impact on quality of life, especially because of the experience of pain. The study found that the impact of pain on the teeth can cause changes in physical, psychological, social, and environmental conditions. Therefore, it is important to redirect dental and oral health services to the elderly[10].

Dental caries can affect quality of life, especially because of the pain[11]. The presence of systemic diseases will potentially worsen the quality of life of the elderly associated with the level of dental caries. The correlation between systemic disease and quality of life associated with dental caries causes the elderly to be more aware of the importance of their dental and oral health so that the quality of life of them remains good. One of the most prominent reasons is that parents consider oral dysfunction to be part of the natural process and the consequences of old age so that the elderly accept only the condition of the decline in quality of life without trying to get help[12].

Along with increasing age, there is also a decline in organ function and various physical changes. This decrease occurs at various levels of cellular, organ, and system[13]. This results in an increase in the incidence of disease in both acute and chronic elderly. Symptoms of oral disease can include pain, infection and disruption of the function of mastication, which can reduce the quality of life for the elderly[14]. In the quality of life of the physical domains, respondents had 1.31 times higher risk of having poor physical health compared to populations with low decay index (OR=1.31). In the psychological health domain of high decay index, respondents had 1.12 times higher risk of poor psychological health (OR=1.12). In addition, the DMf index in the elderly with the social relations domain showed 1.50 higher risk for having a poor social relationship (OR=1.50).

This research was in line with research that states that the better oral health, the better the quality of life[15]. As a person ages, the health status of the teeth and mouth also decreases and the body's organs are also more susceptible to damage because they are used and functioned[16]. In addition, healthy behaviors, especially dental health, have no less role in the elderly's perspective on the influence of oral health on quality of life[17,18].

Quality of life is not only influenced by caries but also other factors, such as periodontal disease, sufficient socio-economic, education and knowledge, environment or culture around, and the level of self-awareness of each individual to maintain dental hygiene and mouth[19].

Conclusion

The better the oral health, the better the quality of life. Quality of life will decrease if oral and dental health decreases. Therefore, empowerment is needed to overcome this condition.

Conflict of Interest : Nill

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Ethical Clearance: Taken

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