Oral Health Condition of Older Adults with Different Nutritional Status in Chamni District, Buriram Province

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Abstract

This study aimed to evaluate the association between oral health status and nutritional status among older adults in Chamni District, Buriram province of Thailand. The participants, aged over 60 years old and met the eligible criteria were enrolled in this study. The information collection included medical, dental and personal history, measurement of body proportions, examination of oral health status, and evaluation of xerostomia by questionnaire and nutritional assessment by mini-nutritional assessment (MNA). Among a total number of 278 participants (67.6% female), 83 subjects (29.9%) were classified as the risk of undernutrition (UN) group and no subject were classified as UN group. All of dental factors and existing of mucosal lesions were failed to demonstrate this association. Regarding to the oral condition, xerostomia (Adj.OR=2.41, 95%CI=1.22-4.78, p=0.01) was significantly associated with the increasing risk of UN, regardless of age, working status, income, betel nut chewing habit, systemic diseases and medications, non-carious tooth defect, and oral lesion. The other factors associated with risk of UN included non-working status, low income, thyroid disorder, and not use of antihypertensive agent. This study found that xerostomia significantly increased the risk of UN, while the other oral factors failed to demonstrate this association.

Keywords: *Aged adults/ Oral health/ Nutritional status/ Nutrition assessment*

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Introduction

Older adults are often at risk of inappropriate food intake and altered nutritional status. Many factors such as low socioeconomic status, educational status as well as smoking habit showed the association with underweight.[1] Moreover, increasing age is the factor affecting various physical changes, including chewing and swallowing ability.[2] Oral health problem is the factor that relates to nutrition one way or another. Having a bad oral condition including periodontitis, dental caries, and tooth loss can cause difficulty in chewing, which affects the food choices of the older adults, leading to deficiency of proteins, vitamins, and minerals.[3] Tooth mobility, periodontal disease, number of remaining teeth, and pain in the mouth associated with difficulty in chewing.[4,5] Additionally, oral pain or discomfort which occur from various causes, such as irritation from slaked lime which usually consumed with betel nut (BN),[6] also affect the nutritional status.[7,8] Consequently, older adults who have malnutrition related to insufficient nutrients intake may develop anemia, scurvy or osteoporosis.[9, 10]

World Health Organization (WHO) suggested that the number of teeth at least 20 and 4 pairs of the occluded tooth will help maintain the adequate chewing ability.[1, 11] The study conducted in northern part of Thailand demonstrated that older adults who had less than 20 teeth related to lower body mass index (BMI) score,[1] however BMI score is still questionable for evaluate nutrition in older adults because of physical change of those.[12] While the other study reported the conflicting result, which the relationship between the number of teeth and malnutrition evaluated by using mini-nutritional assessment (MNA) was not revealed.[13] In Thailand, there was only one study of oral health status that used MNA for the assessment of nutritional status, revealed that the number of teeth and functional tooth units (FTU) in the undernutrition (UN) group were significantly lower than in either normal or the risk of UN group, when evaluated by MNA.[14]

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In addition to dental conditions, saliva plays a significant role in maintaining good oral health, as well as helping oral lubrication and swallowing.[15, 16] The association between reduced stimulated salivary flow and UN in older subjects were reported when examined with MNA.[13] This agrees with the previous studies demonstrated that hyposalivation was associated with loss of appetite[17] and lack of satisfaction when eating.[18] Older adults who experienced dry mouth reported the difficulty in eating dry food and were more likely to consume sweetened beverages with less cereal diet consumption.[19]

Nowadays, nutritional problems are gaining attention in the public health. In Thailand, study about the relationship between oral health and nutrition are still lacking. Hence, the objective of this study was to determine the association between oral health conditions and nutritional status in the older adults in Chamni district, Buriram province, Northeastern Thailand.

Materials and methods

Participants: Research proposal was reviewed and approved by the ethical committee of the Faculty of Dentistry/Faculty of Pharmacy, Mahidol University, Institutional Review Board (No.MU-DT/PY-IRB 2019/053.1508; August 15, 2019) and Buriram province Human Research Ethics Committee.

The stratified sampling was used to obtain the sample of older adults from 6 sub-districts of Chamni district, Buriram province of Thailand. The number of subjects in each sub-district was proportional to the population size in that sub-district. So, the total voluntary older participants aged over 60 years were enrolled in this cross-sectional study and were excluded if their cognitive ability scores, evaluated by using the Thai version of mini-cognitive assessment were lower than 2 points.[20] Participants were also excluded from this study if they had paranoid, confusion, mood disorder, symptoms of schizophrenia, uncontrollable systemic disease, underwent surgery in the past 3 months, or other conditions that affected eating and nutritional assessment. According to the criteria, 278 of those were included in the study. All participants were interviewed about their general information, medical, dental and personal history which included alcoholic beverages consumption, cigarette smoking, and betel nut chewing habit, measured body proportions, and evaluated both nutritional status and oral health status.

Nutrition assessment: MNA[21] was used to determine the nutritional status of the participants in this study. MNA comprised of interview questions, BMI, and anthropometric measurement, included weight and height, arm and calf circumferences and rated the scores as MNA guideline suggestion. MNA scores interpretation, the nutritional status could be categorized into three groups: 1.) UN, if scores under 17 points 2.) Risk of UN, if scores 17-23.5 points 3.) Normal nutrition, if scores 24-30 points.

Oral health status: Oral examination was carried out by the principal investigator (PS.). Participants laid on mobile dental unit with headlamp. The oral conditions were examined by using instruments which consisted of mouth mirror, dental explorer and cotton pliers. All presenting teeth were counted and examined. Data collection included numbers of teeth present and decayed tooth were recorded according to WHO criteria.[22] International Caries Detection and Assessment System (ICDAS) was used to classified decayed tooth. Number of tooth decays were counted when reached ICDAS 2 according to American Dental Association Caries Classification.[23] Tooth contact was counted from the tooth that touched each other, unless there was no existing crown. Also, number of occluded tooth pairs, non-carious tooth defect which included cervical and occlusal surface defect of the tooth, denture-wearing status, and oral mucosal lesion were collected. Tooth mobility was classified by Milles classification; class 1 refers to tooth mobility less than 1 mm, class 2 refers to tooth mobility more than 1 mm, and class 3 refers to tooth mobility more than 1 mm with vertical mobility.

Xerostomia was assessed by using Fox's dry mouth questionnaire.[24,25] The questionnaire consisted of the following questions: 1) Does the amount of saliva in your mouth seem to be too little, too much, or you not notice it? 2)

Do you have any difficulty swallowing? 3) Does your mouth feel dry when eating a meal? 4) Do you sip liquids to aid in swallowing dry food?

Statistical analysis: Statistical analyses were performed with the SPSS version 23.0 software program. The association and comparison of categorical data between groups of nutritional status were analyzed using Chi-square test or Fisher exact test, depending on the expected value. The variables which p-value <0.20 were selected for further analysis with univariate and multiple logistic regression analysis with forward LR to identify factors that correlated to the nutritional status of the participants. A p-value less than 0.05 was statistically significant.

Result

Descriptive analyses. The study population consisted of 278 older adults living in Chamni district, Buriram province. Almost one-third of subjects (29.9%) were classified as at risk of UN, whereas 70.1% was classified as normal nutrition and none of them were classified as UN. The highest MNA score was 30 points, the lowest was 17 points and the mean MNA score was 24.94±2.68 points. The demographic data of subjects are shown in Table 1. There were 188 female subjects, which was twice the number of male subjects (67.6% vs 32.4%). Most of them (83.5%) were in the age range of 60-69 years. Mean age of the subjects was 65.53±4.77 years. Subjects in risk of UN group had higher mean age comparing to normal nutrition group, 66.89 ±5.01 years and 64.94 ±4.55 years, respectively. Two hundred and forty-six subjects (88.5%) were educated at a primary school level, 192 (69.1%) were still working and farmer was the major occupation of the subjects. Also, 186 (66.9%) of subjects had low income (less than 3,000 baht per month). The majority of them were non-smoker (82%), non-drinker (73.4%) and non-BN chewer (67.6%). For medical status, 115 subjects (41.4%) had systemic disease and the most prevalence disease was hypertension (27.0%), followed by diabetes (7.9%) and dyslipidemia (6.5%), in descending order. Antihypertensive (31.7%), antidiabetic (6.8%) and lipid-lowering agents (3.6%) were the 3 most common drugs used, which were consistent with the high prevalence of those diseases (Table 2).

Oral health conditions of subjects are shown in Table 3. Most of subjects (64.4%) had numbers of teeth over 20. Majority of subjects had tooth mobility at least class 1 Milles classification mobility (83.3%), dental caries (81.8%), and non-carious tooth defect (75%). Among the subjects who lost their tooth, 91% did not wear the denture. The percentage of subjects who had posterior tooth pair less than 4 were nearly to those who had greater than or equal to 4 pairs (45.3 vs. 54.7%). Beside dental conditions, soft tissue examination revealed that 38 participants (13.7%) had oral lesion and 28 of those (73.7%) were BN chewer (data not shown). Red lesions were mostly found at buccal mucosa where they always kept BN attached to that site. Evaluation of xerostomia by Fox's dry mouth questionnaire, revealed that 211 participants (75.9%) answered 'no' to all questions while the rest of them (24.1%) answered 'yes' at least 1 question.

Association between demographic variables, medical and personal history, oral health status and nutritional status. Increasing age, non-working status, low income and chewing BN were associated with risk of UN (p-value = 0.03, <0.01, 0.02, <0.01 respectively) (Table 1). For health issues, participants who had thyroid disorder and lung disease, not use of antihypertensive and use of antidepressant/ anxiolytic agents were also significantly associated with increased risk of UN (p-value = 0.03, 0.03, 0.04, 0.02, respectively) (Table 2). Among the Oral health conditions, the only variable that associated with the risk of UN was xerostomia (p-value = 0.01) (Table 3).

Table 1 Association between demographic variables and nutritional status

Demographic data	Total (n =278)		MNA				p-value
			Risk of undernutrition (n =83)		Normal nutrition (n =195)		
	n	%	n	%	n	%	
Gender							0.28
Male	90	32.4	23	27.7	67	34.4	
Female	188	67.6	60	72.3	128	65.6	
Age							0.01*
60- 69	232	83.5	62	74.7	170	87.2	
≥70-79	46	16.5%	21	25.3%	25	12.8%	
Educational level							0.70[F]
Under primary school	14	5.0	6	7.2	8	4.1	
Primary school	246	88.5	72	86.7	174	89.2	
Middle school and above	18	6.5	5	6.0	13	6.6	
Working status							< 0.01*
Still working	192	69.1	46	55.4	146	74.9	
Non-working	86	30.9	37	44.6	49	25.1	
Income							< 0.01*
Lower than 3,000 baht	186	66.9	65	78.3	121	62.1	
Over 3,000 baht	92	33.1	18	21.7	74	37.9	
Smoking status							0.94
Non-smoker	228	82.0	68	81.9	160	82.1	
Ex-smoker	15	5.4	5	6.0	10	5.1	
Current smoker	35	12.6	10	12.0	25	12.8	
Consumption of alcoholic beverages							0.69
Not consumption	204	73.4	58	69.9	146	74.9	
Ex-consumption	21	7.6	7	8.4	14	7.2	
Current consumption	53	19.1	18	21.7	35	17.9	
Betel nut chewing status							< 0.01*
Non-chewer	188	67.6	45	54.2	143	73.3	
Current chewer	90	32.4	38	45.8	52	26.7	

p-value from Chi-Square test, F = p-value from Fisher's Exact Test, * Significant at the 0.05 level

Table 2 Association between medical status variables and nutritional status

Medical status	Total (n =278)		MNA				p-value
			Risk of undernutrition (n =83)		Normal nutrition (n =195)		
	n	%	n	%	n	%	
Medical status							
Hypertension	75	27.0	17	20.5	58	29.7	0.11
Diabetes mellitus	22	7.9	4	4.8	18	9.2	0.21
Dyslipidemia	18	6.5	5	6.0	13	6.7	0.84
Thyroid disorder	7	2.5	5	6.0	2	1.0	0.03*[F]
Heart disease	5	1.8	2	2.4	3	1.5	0.64
Lung disease	5	1.8	4	4.8	1	0.5	0.03*[F]
Kidney disease	2	0.7	1	1.2	1	0.5	0.51[F]
Others	15	5.4	7	8.4	8	4.1	0.16[F]
Pharmacy							
Antihypertensive drugs	88	31.7	19	22.9	69	35.4	0.04*
Lipid lowering drugs	10	3.6	3	3.6	7	3.6	1.00
Oral diabetes med	19	6.8	4	4.8	15	7.7	0.45
Antiplatelet	7	2.5	3	3.6	4	2.1	0.43[F]
Anticoagulant	3	1.1	2	2.4	1	0.5	0.21[F]
Antihistamine	1	0.4	1	1.2	0	0	0.30[F]
Antidepressant and anxiolytic	9	3.2	6	7.2	3	1.5	0.02*

p-value from Chi-Square test, F = p-value from Fisher's Exact Test, * Significant at the 0.05 level

Table 3 Association between oral health variables and nutritional status

Oral health conditions	Total (n =278)		MNA				p-value
			Risk of undernutrition (n =83)		Normal nutrition (n =195)		
	n	%	n	%	n	%	
Number of teeth							0.28
0	14	5.0	4	4.8	10	5.1	
1-19	85	30.6	31	37.3	54	27.7	
≥ 20	179	64.4	48	57.8	131	67.2	
Have tooth mobility	220	83.3	69	87.3	151	81.6	0.25
Have dental caries	216	81.8	61	77.2	155	83.8	0.21
Have non-carious tooth defect	198	75.0	55	69.6	143	77.3	0.19
Denture-wearing status							0.57[F]
Wearing denture	14	5.0	2	2.4	12	6.2	
Not wearing denture	253	91.0	77	92.7	176	90.3	
Posterior occlusal tooth pair							0.92
< 4 tooth pairs	126	45.3	38	45.8	88	45.1	
≥ 4 tooth pairs	152	54.7	45	54.2	107	54.9	
Oral lesion							0.16
Normal	240	86.3	68	81.9	172	88.2	
Have oral lesion	38	13.7	15	18.1	23	11.8	
Xerostomia							0.01*[F]
Yes at least 1 question	67	24.1	28	33.7	39	20.0	
No to all questions	211	75.9	55	66.3	156	80.0	

p-value from Chi-Square test, F = p-value from Fisher's Exact Test, * Significant at the 0.05 level

Univariate and Multiple logistic regression analysis. Table 4 showed the result of model using univariate and forward LR multiple logistic regression analysis which analyzed 12 independent variables that p-value <0.2, with nutritional status as dependent variable. The univariate analysis showed that age, working status, income, BN chewing habit, thyroid disorder, lung disease, antihypertensive and antidepressant/ anxiolytic drugs, and xerostomia were associated with nutritional status. Age over 70 years, non-working status, income less than 3,000 baht per month showed an increased risk of UN (OR = 2.30, 2.40, 2.21, 2.3, respectively). For medical issues, coexisting with thyroid disorder and lung disease, not use of antihypertensive drug, use of antidepressant and anxiolytic agents were associated with risk of UN (OR = 6.19, 9.82, 1.85, 4.99, respectively). Regarding to oral health status, xerostomia showed a higher risk of UN (OR = 2.036).

The multiple regression analysis using nutritional status as a dependent variable is shown in the right column. When controlling for confounding variables in the model, non-working status, low income, thyroid disorder, not use of antihypertensive drug remained statistically significant as a risk factor for UN (OR = 2.09, 2.41, 9.56, 2.51, respectively). Xerostomia was also associated with increased risk of UN after adjusting for age, working status, income, BN chewing habit, systemic diseases and medications, non-carious tooth defect, and oral lesion (OR = 2.41, 95% CI = 1.22-4.78, p = 0.01).

Table 4 Univariate and Multiple logistic regression analysis of factors associated with nutritional status

	Crude OR	95% CI		p-value	Adj. OR	95%CI		p-value
		Lower	Upper			Lower	Upper	
Age (≥70)	2.30	1.20	4.41	0.01*	-	-	-	
Working status (non-working)	2.40	1.34	4.11	<0.01*	2.09	1.06	4.14	0.03*
Income (< 3,000 baht / month)	2.21	1.22	4.01	0.01*	2.41	1.19	4.91	0.02*
Betel nut chewing habit	2.32	1.36	3.97	<0.01*	-	-	-	-
Hypertension	0.61	0.33	1.13	0.11	-	-	-	-
Thyroid disorder	6.19	1.18	32.56	0.03*	9.56	1.12	64.50	0.02*
Lung disease	9.82	1.08	89.26	0.04*	-	-	-	-
Antihypertensive drug (no)	1.85	1.02	3.33	0.04*	2.51	1.21	5.19	0.01*
Antidepressant / anxiolytic drugs (yes)	4.99	1.22	20.45	0.03*	-	-	-	-
Non-carious tooth defect	0.67	0.37	1.21	0.19	-	-	-	-
Xerostomia	2.04	1.15	3.62	0.02*	2.41	1.22	4.78	0.01*
Oral lesion	1.65	0.81	3.35	0.17	-	-	-	-

Adj. OR was adjusted for age, working status, income, betel nut chewing habit, hypertension, thyroid disorder, lung disease, antihypertensive drug, antidepressant and anxiolytic drug, non-carious tooth defect, xerostomia, and oral lesion.

* Significant at the 0.05 level

Discussion

From the literature, there were several studies that aimed to evaluate the relationship between the oral condition and nutritional status by using different evaluation tools and conducted in different countries, that demonstrated the dissimilar results. In Thailand, there was only one study of oral health status that used MNA for the assessment of nutritional status.[14] Regarding to the oral and dental conditions, in this study, we collected data both from questionnaires and oral examinations, in order to evaluate the dry mouth condition, carious and non-carious dental problems, number of remaining teeth and occlusal status, periodontal problem, as well as denture wearing status and mucosal lesion. Due to reliability, ease of use, and suitable for community surveys, MNA was used to assess the nutritional status of the subjects.

The subjects in this current study were older adults living in community dwelling. For nutritional status, this study exhibited the percentage of risk of UN group as 29.9%, which slightly higher than data of those among older adults in Chamni district, where 20.7% were reported to be at risk of UN (the data from Chamni hospital 2018). However, the latter group was assessed the nutritional status by BMI measurement. Based on this information, it may be said that the use of MNA as the nutritional screening tool can detect older adults at risk of UN while their BMI remains normal[21]. Regarding the demographic status and health behavioral characteristics, we found no difference in gender, educational level, smoking status, consumption of alcoholic beverages between risk of UN group and normal nutrition group.

Xerostomia, the subjective symptom of oral dryness,[24,26-28] was the only oral health factor that associated with nutritional status in this study. This condition was reported as the oral problem that affected quality of life[28] and related to UN.[28-30] The result of this study was similar to the previous study in Thailand, Samnieng[30] found that participants with hyposalivation had significantly lower mean MNA score compared to those who had normal salivation. Although, high accuracy of sialometry in the assessment of salivary gland function, it may be not suitable for community-based screening. Several questionnaires were developed to evaluate the salivation status. In our present study, Fox's questionnaire was used. The persons who answered yes at least one question

to Fox's questionnaire would be classified as having xerostomia problem. These questions have been reported to be associated with hyposalivation.[24]

On the contrary, Quandt et al.[19] revealed that dry mouth in older subjects did not result in poorer dietary quality, compared to those without dry mouth. However, they reported that severe dry mouth was associated with lower intake of whole grain and higher intake of total fruit and also strongly associated with self-reported modification and avoidance of foods. Similarly, Sheiham et al[31] found that the older adults with dry mouth, whether with or without tooth reported the difficulty in eating dry foods such as bread, toast and fried potato more than those without dry mouth, however there was no significant difference between the two groups.

Many studies revealed that less number of teeth, non-denture wearing, limited occluded tooth pairs related to nutritional disturbance.[32, 33] Moreover, regarding to WHO, individuals who have remaining teeth at least 20 and 4 pairs of the occluded tooth have the ability to chew effectively.[1, 10] The results of this present study showed that all of those dental factors failed to demonstrate the association with the risk of UN. However, it was agreeable to previous study, Mesas et al.[29] also found no significant association between the number of teeth or occlusal status and the MNA score. Similar to Soini et al.[34] reported none of the dental factors associated with the MNA score. A recent systematic review of longitudinal study[35] stated that, until present day, there is no strong evidence regarding the effect of tooth loss on diet and nutrition because of inconsistent results amongst the few longitudinal studies. Tada and Miura[36] concluded in another systematic review that "discrepant findings suggest that masticatory ability explains only part of the variance in food and nutrient intake of the older adults". It was found that differences in nutrition outcomes could be explained by the number of FTU together with the other determinants, such as the perception of xerostomia and Geriatric Oral Health Assessment Index (GOHAI).[37]

Loose teeth with pain were associated with chewing disability[4,5] and severe tooth mobility related to UN[29] due to restricting food choice and the trend to choose softer food that may contain lower nutritional value.[5, 38] Previous study that examined the association between periodontal status and MNA score, stated that only advanced periodontal disease was associated with UN.[5] In order to apply the suitable method for community-based screening, this study evaluated the periodontal problem only on tooth mobility, not all periodontal parameters. This could not reflect on the actual periodontal status of the participants. Consequently, the association between periodontal status and UN might not be revealed.

For age factor, the univariate analysis revealed that age over 70 increased the risk of UN. But when the confounding variables were controlled, the relationship between this variable and nutritional status was not revealed. This result might show that age alone is not an important indicator of the nutritional deficiencies in the older adults. The other factors that exhibited the increased risk of UN were non-working status, low monthly income, thyroid disorder, not use of antihypertensive agents. These results were beyond the scope of this study, and required further investigation to explain the association shown here.

Due to the fact that the results from cross-sectional study could not determine whether the factors are cause or effect, this study could only exhibit the association between various factors and nutritional status evaluated by MNA score. The subjects in this study were older adults who living in the northeastern region, whose lifestyles, dietary characteristic, family condition, and socioeconomic status might be different from the other part of country. Therefore, the results might not be able to reflect such association in all areas of Thailand.

In conclusion, almost one third of the older adults in this study were at risk of UN. The factors that significantly associated with this condition were increasing age, low income, non-working status, certain systemic disorders, and certain classes of medication. Considering the oral health factor, xerostomia was a factor that increased risk of UN. Hence, the evaluation of xerostomia, as a part of geriatric assessment, would benefit to reduce the risk of malnutrition in the elderly individuals.

References

1. Srisilapanan P, Malikaew P, Sheiham A. Number of teeth and nutritional status in Thai older people. Community Dent Health 2002;19:230-6.
2. Zulkowski K. Nutrition and aging: a transdisciplinary approach. Ostomy Wound Manage 2006;52:53-7.
3. Kwon SH, Park HR, Lee YM, Kwon SY, Kim OS, Kim HY, et al. Difference in food and nutrient intakes in Korean elderly people according to chewing difficulty: using data from the Korea National Health and Nutrition Examination Survey 2013 (6th). Nutrition research and practice 2017;11:139-46.
4. Singh KA, Brennan DS. Chewing disability in older adults attributable to tooth loss and other oral conditions. Gerodontology 2012;29:106-10.
5. Padilha DM, Hilgert JB, Hugo FN, Bos AJ, Ferrucci L. Number of teeth and mortality risk in the Baltimore Longitudinal Study of Aging. J Gerontol A Biol Sci Med Sci 2008;63:739-44.
6. Buaban K. The relationship between oral conditions on the quality of life in the elderly Mae Ramat district, Tak province. J Gerontol Geriatr Med 2017;16:45-56.
7. Javed F, Bello Correra FO, Chotai M, Tappuni AR, Almas K. Systemic conditions associated with areca nut usage: a literature review. Scand J Public Health 2010; 38:838-44.
8. Ogunkolade WB, Boucher BJ, Bustin SA, Burrin JM, Noonan K, Mannan N, et al. Vitamin D metabolism in peripheral blood mononuclear cells is influenced by chewing "betel nut" (Areca catechu) and vitamin D status. J Clin Endocrinol Metab 2006;91:2612-7.
9. Muller O, Krawinkel M. Malnutrition and health in developing countries. Cmaj 2005;173:279-86.
10. Kaewanun C. Nutrition of the elderly. EAU heritage Journal Science and technology 2018;12:112-9.
11. Recent advances in oral health: report of a WHO Expert Committee. World Health Organ Tech Rep Ser 1992;826:1-37.
12. Assantachai P, Yamwong P, Lekhakula S. Alternative anthropometric measurements for the Thai elderly: Mindex and Demiquet. Asia Pac J Clin Nutr 2006; 15:521-7.
13. Mesas AE, Andrade SM, Cabrera MA, Bueno VL. Oral health status and nutritional deficit in noninstitutionalized older adults in Londrina, Brazil. Rev Bras Epidemiol 2010;13:434-45.
14. Samnieng P, Ueno M, Shinada K, Zaitsu T, Wright FA, Kawaguchi Y. Oral health status and chewing ability is related to mini-nutritional assessment results in an older adult population in Thailand. J Nutr Gerontol Geriatr 2011;30:291-304.
15. Vathanophas V, Supachavalit K, Keskool P, Ongard S. Factors Associated with Xerostomia in Non-Radiated Patients. SMJ 2019;71:377-84.
16. Cassolato SF, Turnbull RS. Xerostomia: clinical aspects and treatment. Gerodontology 2003;20:64-77.
17. Folke S, Fridlund B, Paulsson G. Views of xerostomia among health care professionals: a qualitative study. J Clin Nurs 2009;18:791-8.
18. Dormenval V, Mojon P, Budtz-Jorgensen E. Associations between self-assessed masticatory ability, nutritional status, prosthetic status and salivary flow rate in hospitalized elders. Oral Dis 1999;5:32-8.
19. Quandt SA, Savoca MR, Leng X, Chen H, Bell RA, Gilbert GH, et al. Dry mouth and dietary quality in older adults in north Carolina. J Am Geriatr Soc 2011;59:439-45.
20. Trongsakul S, Lambert R, Clark A, Wongpakaran N, Cross J. Development of the Thai version of Mini-Cog, a brief cognitive screening test. Geriatr Gerontol Int 2015;15:594-600.
21. Guigoz Y. The Mini Nutritional Assessment (MNA) review of the literature--What does it tell us? J Nutr Health Aging 2006;10:466-85; discussion 85-7.
22. Petersen PE, Baez RJ, World Health Organization. Oral health surveys: basic methods. 5th ed. Geneva: World Health Organization; 2013.

23. Young DA, Nový BB, Zeller GG, Hale R, Hart TC, Truelove EL. The American Dental Association Caries Classification System for clinical practice: a report of the American Dental Association Council on Scientific Affairs. J Am Dent Assoc 2015;146:79-86.
24. Fox PC, Busch KA, Baum BJ. Subjective reports of xerostomia and objective measures of salivary gland performance. J Am Dent Assoc 1987;115:581-4.
25. Villa A, Connell CL, Abati S. Diagnosis and management of xerostomia and hyposalivation. Ther Clin Risk Manag 2015;11:45-51.
26. Minja I, Ndalahwa M, Lyimo A. Prevalence and Assessment of Dry Mouth: A Study among Selected Group of Elderly Patients in Dar es Salaam. EC Dental Science 2019;18:392-400.
27. Bergdahl M. Salivary flow and oral complaints in adult dental patients. Community Dent Oral Epidemiol 2000; 28:59-66.
28. Hopcraft MS, Tan C. Xerostomia: an update for clinicians. Aust Dent J 2010;55:238-44; quiz 353.
29. Mesas AE, Andrade SM, Cabrera MA, Bueno VL. Oral health status and nutritional deficit in noninstitutionalized older adults in Londrina, Brazil. Rev Bras Epidemiol 2010;13:434-45.
30. Samnieng P, Ueno M, Shinada K, Zaitsu T, Wright FA, Kawaguchi Y. Association of hyposalivation with oral function, nutrition and oral health in community-dwelling elderly Thai. Community Dent Health 2012;29:117-23.
31. Sheiham A, Steele JG, Marcenes W, Finch S, Walls AW. The impact of oral health on stated ability to eat certain foods; findings from the National Diet and Nutrition Survey of Older People in Great Britain. Gerodontology 1999;16:11-20.
32. Furuta M, Komiya-Nonaka M, Akifusa S, Shimazaki Y, Adachi M, Kinoshita T, et al. Interrelationship of oral health status, swallowing function, nutritional status, and cognitive ability with activities of daily living in Japanese elderly people receiving home care services due to physical disabilities. Community Dent Oral Epidemiol 2013;41:173-81.
33. Kikutani T, Yoshida M, Enoki H, Yamashita Y, Akifusa S, Shimazaki Y, et al. Relationship between nutrition status and dental occlusion in community-dwelling frail elderly people. Geriatr Gerontol Int 2013;13:50-4.
34. Soini H, Routasalo P, Lauri S, Ainamo A. Oral and nutritional status in frail elderly. Spec Care Dentist 2003;23:209-15.
35. Gaewkhiew P, Sabbah W, Bernabe E. Does tooth loss affect dietary intake and nutritional status? A systematic review of longitudinal studies. J Dent 2017;67:1-8.
36. Tada A, Miura H. Systematic review of the association of mastication with food and nutrient intake in the independent elderly. Arch Gerontol Geriatr 2014;59:497-505.
37. El Osta N, Hennequin M, Tubert-Jeannin S, Abboud Naaman NB, El Osta L, Geahchan N. The pertinence of oral health indicators in nutritional studies in the elderly. Clin Nutr 2014;33:316-21.
38. Yoshihara A, Watanabe R, Hanada N, Miyazaki H. A longitudinal study of the relationship between diet intake and dental caries and periodontal disease in elderly Japanese subjects. Gerodontology 2009;26:130-6.

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สภาวะสุขภาพช่องปากของผู้สูงอายุที่มีภาวะโภชนาการระดับต่างๆ ในเขตอำเภอชำนิ จังหวัดบุรีรัมย์

ไพลิน สิทธิโชคตระกูล ศิริชัย เกียรติถาวรเจริญ** ระวีวรรณ อารยะสันติภาพ*** นิษณ์ โอกูม่า*****

บทคัดย่อ

การศึกษานี้มีวัตถุประสงค์เพื่อศึกษาความเกี่ยวข้องของสภาวะสุขภาพช่องปากกับภาวะโภชนาการของผู้สูงอายุในเขตอำเภอชำนิ จังหวัดบุรีรัมย์ ผู้เข้าร่วมงานวิจัยเป็นผู้สูงอายุ มีอายุ 60 ปีขึ้นไป และมีคุณสมบัติตามเกณฑ์ที่กำหนดไว้ การรวบรวมข้อมูลประกอบด้วยประวัติทางการแพทย์ ประวัติทางทันตกรรม และประวัติส่วนบุคคล การวัดสัดส่วนของร่างกาย การตรวจสภาวะสุขภาพช่องปาก ประเมินภาวะปากแห้งด้วยแบบสอบถาม และประเมินโภชนาการด้วย mini-nutritional assessment (MNA) มีผู้เข้าร่วมที่ผ่านเกณฑ์ทั้งสิ้น 278 คน (ร้อยละ 67.6 เป็นเพศหญิง) พบว่า 83 คน (ร้อยละ 29.9) ถูกจัดอยู่ในกลุ่มที่เสี่ยงต่อภาวะขาดสารอาหาร และไม่มีผู้ที่อยู่ในกลุ่มขาดสารอาหาร ปัจจัยในด้านลักษณะและจำนวนของฟัน รวมถึงการมีโรคของเยื่อเมือกช่องปาก ไม่พบว่ามีความสัมพันธ์กับภาวะเสี่ยงต่อการขาดสารอาหาร ในขณะที่ภาวะปากแห้ง (Adj.OR=2.41, 95%CI=1.22-4.78, p=0.01) มีความสัมพันธ์กับการเพิ่มความเสี่ยงของภาวะขาดสารอาหารอย่างมีนัยสำคัญ โดยไม่เกี่ยวกับ อายุ สถานะการทำงาน รายได้ โรคทางระบบ และยาที่ได้รับ รอยโรคบนฟันจากเหตุที่ไม่ใช่ฟันผุ และรอยโรคในช่องปาก ส่วนปัจจัยอื่นที่พบว่ามีความสัมพันธ์กับการเสี่ยงต่อภาวะขาดสารอาหาร ได้แก่ การไม่ได้ทำงาน การมีรายได้น้อย การมีความผิดปกติของต่อมไทรอยด์ และการไม่ได้รับยารักษาความดันโลหิตสูง การศึกษานี้พบว่าภาวะปากแห้งเพิ่มความเสี่ยงต่อการขาดสารอาหาร ในขณะนี้ปัจจัยในช่องปากอื่นๆ ไม่แสดงถึงความสัมพันธ์ดังกล่าว

คำไขรหัส: *ผู้สูงอายุ/ สุขภาพช่องปาก/ ภาวะโภชนาการ/ การประเมินภาวะโภชนาการ*

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