Prevalence of Dry Mouth and Related Factors among Older Adults with Low Income Living in a Suburban Area

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At the 143rd APHA Annual Meeting, Chicago, IL, November 2, 2015

BACKGROUND

- Dry mouth occurs when inconsistent amounts of saliva are produced or the total amount produced is not sufficient to keep the mouth wet.[1]
- Dry mouth in older adults is a **commonly reported symptom** which has not been received enough attention to understand the phenomena.[2]
- The prevalence ranging widely from 14.5% and 47%, with the literature regarding prevalence of dry mouth among older people remaining meager.[3,4]
- Dry mouth leads to **impaired oral function** with regard to chewing solid food, swallowing both liquids and solid food, speaking, and/or tasting. [5]
- These problems may result in **systemic problems** including loss of appetite, poor nutrition, impaired interpersonal communication and social interactions, or depression. Any of these factors may result in **lower quality of life** for older adults.

OBJECTIVE

To identify the prevalence of dry mouth and related health and oral conditions among low income older adults living independently in the community

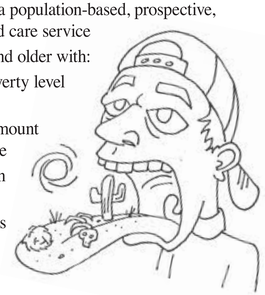
SPECIFIC AIMS

1. Identifying the prevalence of dry mouth and characteristics of participants' demographics, health conditions, oral conditions, and oral functions
2. Evaluating the association of dry mouth with related risk factors (health status, oral conditions, and oral function).

METHODS

Design and Sample

- Secondary data from the Home Healthcare Service Project (HHCSP) 2012-2013, a population-based, prospective, repeated measures and care service
- Adults age 65 years and older with:
  - 120% of federal poverty level (FPL) or
  - Paying the lowest amount for health insurance
  - Living in a suburban area of S. Korea
- Face to face interviews
- N= 9,840



MEASURES

- Dry mouth: A self-reported response (yes or no) to the question
- Age: 65-74, 75-84, and 85+ years old.
- Living status: Living alone versus living with others.
- Priorities of the project: (1) Those with lower income and health problems, and (2) Those with health problems only.

Care levels:

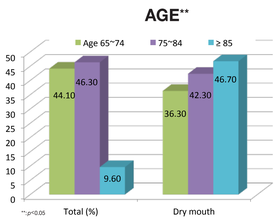
- 1) Intensive/ regular care (6-10 RN visits per 2-3 months / more than once) 2) Self-care support/newly joined group
- Alcohol drinking: 1) <1/week; or 2) ≥ 2/week
- Chronic health status: 1) 0 ~ 2 and 2) ≥ 3+ chronic conditions
- **Oral conditions:**
  - Gum bleeding or pain, having dentures, poor fit of dentures, and number of teeth: Yes or no
  - number of teeth: : 1) ≥ 20; 2) 10-19; and 3) < 10 or no teeth at all.
- **Oral function:**
  - Discomfort in your teeth, gum or dentures: 5 point Likert scale from 0 no discomfort to 4.discomfort. Then dichotomized to : 1) Uncomfortable versus 0) average/ comfortable
  - swallowing liquid food or beverages: 'yes' or 'no'
  - difficulty in chewing food over the past 6 months: 'yes' or 'no'

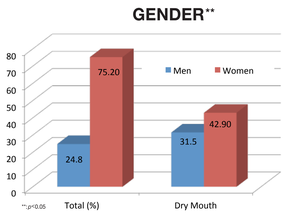
ANALYSIS

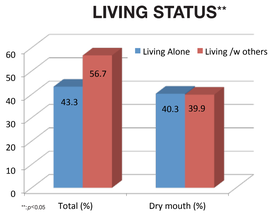
- Bivariate analysis with a chi-square value
- Multivariate logistic regression

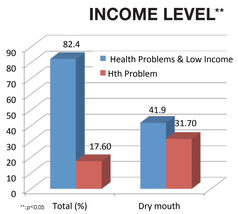
RESULT

- Overall 40% of participants reported experiencing dry mouth.
- Women, the old-old group (age 85+), the group with low income and health problems, and Regular/intense (frequent) care group reported a significantly higher prevalence of dry mouth than the counter parts of men, young-old group, those with better income, and self-care groups, respectively.









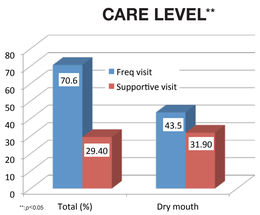


Table 1. Characteristics of Oral Conditions and Prevalence of Dry Mouth (N = 9,840)

	n	(%)	Dry Mouth	(%)	χ^2	*p*	
Health conditions & behavior							
Currently smoking:							
Yes	922	(9.4)	355	(38.5)	1.04	.307	
No	8918	(90.6)	3588	(40.2)			
Alcohol drinking:							
0~1/wk	9258	(94.1)	3777	(40.8)	34.36	.000	‡
≥ 2/wk	582	(5.9)	166	(28.5)			
No. of chronic diseases:							
0~2	4155	(42.2)	1336	(32.2)	187.72	.000	‡
≥ 3	5685	(57.8)	2607	(45.9)			
Oral Conditions							
Self-reported gum bleeding or pain							
Yes	2756	(28.5)	1299	(47.1)	80.22	.000	‡
No	6929	(71.5)	2581	(37.2)			
Having dentures:							
Yes	4725	(48.0)	2044	(43.3)	38.47	.000	‡
No	5115	(52.0)	1899	(37.1)			
Poor fit of dentures:							
Yes	2047	(43.3)	1038	(50.7)	81.65	.000	‡
No	2678	(56.7)	1006	(37.6)			
Number of teeth:							
≥ 20	2742	(27.9)	868	(31.7)			
10-19	3137	(31.9)	1312	(41.8)	117.36	.000	‡
< 10	3961	(40.3)	1763	(44.5)			
Oral Functions							
Discomfort in chewing:							
Uncomfortable	7381	(76.3)	3116	(42.2)	63.29	.000	‡
Comfortable	2292	(23.7)	754	(32.9)			
Difficulty in swallowing liquids							
No	8268	(84.1)	2768	(33.5)	942.66	.000	‡
Yes	1558	(15.9)	1169	(75.0)			
Developed difficulty in chewing over the past 6 month							
No	7245	(73.7)	2383	(32.9)	588.91	.000	‡
Yes	2588	(26.3)	1556	(60.1)			

NOTE. * $p < .05$, † $p < 0.01$, ‡ $p < 0.001$

- Multivariate regression analysis indicated those who had difficulty **chewing solid food** and **swallowing liquids** had the significantly highest odd ratios of dry mouth problems (OR = 2.21 and OR = 4.69, P < 0.001), respectively.

CONCLUSION

- The prevalence of dry mouth in older adults was high and associated with oral conditions and functions.
- Strategies for early detection and treatment of the problem should be developed.

Table 2. Factors Associated with Dry Mouth on Selected Predictors a (N = 9,542)

	Presence of Dry Mouth OR	95% CI LL	UL	Sig	
Demographics					
Age (years)					
65~74	1.00				
75~84	1.07	.97	1.18	.165	
≥ 85	1.08	.92	1.28	.342	
Gender					
Men	1.00				
Women	1.42	1.26	1.60	.000	‡
Priority of Project					
Health Problem	1.00				
Low Income and Health Problem	1.33	1.17	1.500	.000	‡
Classification of Project					
Self-care gr.	1.00				
Intensive/regular care gr.	1.34	1.21	1.49	.000	‡
Living Status					
With Others	1.00				
Alone	.85	.78	.93	.001	*
Health conditions & behavior					
Currently Smoking					
Yes	1.00				
No	1.13	.96	1.32	.148	
Alcohol Drinking					
0~1/wk	1.00				
≥ 2/wk	.75	.60	.92	.006	*
No. of Chronic Diseases					
0~2	1.00				
≥ 3	1.48	1.35	1.62	.000	‡
Oral Condition					
Self-reported gum Bleeding or Pain					
None	1.00				
Present	1.20	1.09	1.33	.000	‡
Having (Usage of) Dentures					
No	1.00				
Yes	1.10	.98	1.24	.102	
Number of Teeth					
≥ 20	1.00				
10~19	1.22	1.08	1.38	.001	*
< 10 or None	1.12	.97	1.30	.134	
Oral Function					
Discomfort in chewing					
Average/Comfortable	1.00				
Uncomfortable	1.10	.98	1.23	.108	
Difficulty in swallowing liquids					
No	1.00				
Yes	4.69	4.12	5.35	.000	‡
Developed difficulty in chewing over the past 6 month					
No	1.00				
Yes	2.21	2.00	2.45	.000	‡
Model significance	$X^2_{(16)}$= 1534.27, P < .001				
Model accuracy rate (%)	69.5				

Note. * Numbers in cells are odds ratios and 95% confidence intervals for the partial associations between each factor and the symptoms of dry mouth. CI: Confidence Interval; LL: Lower level; UL: Upper level. *: $p < 0.05$. †: $p < 0.01$. ‡: $p < 0.001$.

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