研 究 者：Tin Zar Tun

（所属：Division of Preventive Dentistry, Faculty of Dentistry, Niigata University）

研 究 題 目：Oral Function Status, Oral Hypofunction and its Associated Factors in Japanese Older Adults Receiving Outpatient Dental Care

目　的：

To find out the prevalence of oral hypofunction (OHF) and to identify the possible predictors of OHF in older adults with regular dental maintenance.

対象および方法：

The research examines oral hypofunction and its associated factors. Oral function and related factors were evaluated in 127 Japanese older adults from the Niigata University Medical and Dental University Hospital outpatient clinic between April and December 2022. Participants who refuse to participate, have decreased cognitive function as measured by a Mini-Mental State Examination (MMSE) score of 20, or have taken or are currently taking medications that may affect salivary secretion will be excluded from the study. The participants' age, sex, medication history, lifestyle, and previous medical history were all evaluated and documented. The Lubben Social Network Scale (LSNS-16) and the General Oral Health Assessment Index (GOHAI) were used to assess social withdrawal and quality of life with oral health. After determining each participant's height in centimeters and weight in kilograms, the body mass index, or BMI, was computed. The following seven oral functions were tested: oral hygiene (bacterial counter, Panasonic), oral dryness (unstimulated saliva amount, ml/min), occlusal force (remaining number of teeth), lip and tongue motor function (Kenkou-kun Handy®), tongue pressure (JPM-01), masticatory performance (Gummy Jelly), and swallowing ability (repetitive saliva swallowing test, RSST). Oral hypofunction was defined as three or more reduced oral functions. The Ethical Committee of Niigata University Medical and Dental Hospital approved this study (2021-0172).

結果および考察：

Of the 127 participants, females are predominant, 40 males and 87 females, with a mean age of 75.9 ± 5.9 years. The characteristics of the participants are presented in Table 1. Most participants were married females who received regular dental care and did not smoke. The frequency distribution of the oral function and the percentage of participants who had oral hypofunction based on the oral function test are shown in Figure 1. Based on our findings, the three oral functions that were most affected were tongue pressure, oral motor function, and oral hygiene, as determined by the bacterial counter.

Table 1. General characteristics of the participants

Variables		n (%)	OHP (%)	p value
Age	Pre-old	49 (38.6)	42.9	
	Early old	37 (29.1)	51.4	**0.006***
	Late old	41 (32.3)	75.6	
Sex	Male	40 (31.5)	50	0.237
	Female	87 (68.5)	58.6	
Education	College or higher	57 (44.9)	52.6	
	High school	59 (46.5)	55.9	0.47
	Junior High School	11 (8.7)	72.7	
Occupation	Employed	16 (12.6)	50	0.403
	Unemployed	111 (87.4)	56.8	
Marital Status	Married	94 (74.0)	52.1	0.106
	Unmarried	33 (26.0)	66.7	
Family size	Alone	62 (48.8)	63.2	
	2 people	25 (19.7)	45.2	0.056
	3 or more	40 (31.5)	67.4	
Long-term medications	Yes	99 (78.0)	59.6	0.087
	No	28 (22.0)	42.9	
Toothbrushing (times/day)	2 times or more	107 (84.3)	50	0.351
	1 time or less	20 (15.7)	57.5	
Smoking	Yes	33 (26.0)	60.6	0.336
	No	94 (74.0)	54.3	
Number of remaining teeth	Normal	101 (79.5)	49.5	
	Reduced (<20)	26 (20.5)	80.8	**0.003***
	Reduced (<5)	4 (3.1)	25	
Able to chew by molars	Both sides	114 (89.8)	56.1	
	Only one side	9 (7.1)	44.4	0.585
	Cannot	4 (3.1)	75	
BMI risk	Healthy (18.5-24.9)	95 (74.8)	55.8	
	Underweight (<18.5)	14 (11.0)	50	0.82
	Overweight (>24.9)	18 (14.2)	61.1	
Social withdrawal (LSNS)	Normal	79 (62.2)	64.6	0.088
	LSNS <12	48 (37.8)	50.6	
OHRQoL (GOHAI)	High Score (46-60)	120 (94.5)	85.7	0.105
	Low score (1-45)	7 (5.5)	54.2	

Data are presented as the number of participants (%). The significance level is <0.05. The distribution of variables across the Oral Hypofunction group categories. nFTU-natural functional tooth unit, total FTU- total functional tooth unit, BMI- body mass index, LSNS- Lubben social network scale, OHRQoL- oral health related quality of life, GOHAI-General oral health assessment index, OHP- oral hypofunction, *p <0.05, **p < 0.001.
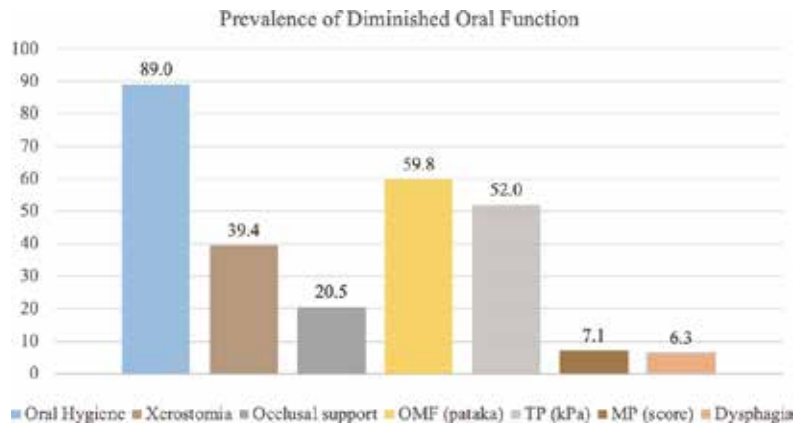
Figure 1: Distribution of Oral Function Test results

Table 2 represents the oral function distribution according to age group. The study classified patients with three or more impaired oral functions as having OHF, with a prevalence of 60.6%. The prevalence of OHF was higher in females (62.1%) than in males (57.5%), and was found to be 48.3 % in the pre-old age group and 71.0 % in the old age group. The decline in tongue-lip motor functions and tongue pressure is attributed to age-related reduction in muscle tone. The old-age group had significantly lower OMF (ta), OMF (ka), and TP. The oral function in older adults living alone, socially isolated, taking long-term medications, and with metabolic syndrome is diminished (Table 3). The oral function of older outpatients is impacted by aging, but so are oral hygiene practices, tongue-lip motor function, and tongue pressure. The oral function of older adults is significantly impacted not only by oral factors but also by social factors and overall well-being. Thus, maintaining optimal oral function would require focusing on the social and general well-being of older adults.

Table 2. Oral function based on age groups

Oral Function	Pre-old (65-74) (n=58)	Reduced Function (%)	Old (≥75) (n=69)	Reduced Function (%)	p-value
Oral Hygiene (score)	4.9 ± 1.5	89.7	4.9 ± 1.4	88.4	0.808
Xerostomia (ml/min)	0.2 ± 0.2	39.7	0.2 ± 0.2	39.1	0.724
Occlusal support (number)	24.6 ± 4.6	17.2	23.5 ± 5.2	23.2	0.361
OMF /pa/ (number/min)	6.4 ± 0.6	19.0	6.1 ± 0.7	30.4	0.136
/ta/ (number/min)	6.4 ± 0.6	19.0	5.9 ± 0.8	46.4	**0.001***
/ka/ (number/min)	5.9 ± 0.8	43.1	5.5 ± 1	63.8	**0.032***
TP (kPa)	31.5 ± 9	37.9	26.7 ± 9	63.8	**0.011***
MP (score)	5.6 ± 1.8	8.6	5.6 ± 1.6	5.8	0.991
Dysphagia (score)	4.3 ± 1.6	5.2	4.2 ± 1.3	7.2	0.681

Data are presented as the mean and standard deviation of participants or number and frequency (* $p<0.05$, Mann Whitney U), Bold represent significant differences—TP- tongue pressure, MP- masticatory performance. Oral hygiene was measured by the bacterial counter, xerostomia by unstimulated saliva amount, Dysphagia by RSST

Table 3. Associated factors related to OHF in the old-age group

Variables		OHF in pre-old (65-74) (n=28) (%)	p value	OHF in old (≥75) (n=49) (%)	p value
Living condition	Alone	50.0	0.874	69.2	**0.010**
	with one person	45.2		54.8	
	more than one person	52.4		92.0	
Longterm Medication	Yes	48.8	0.885	76.8	**0.028**
	No	46.7		46.2	
Metabolic syndrome	0	35.7	0.169	58.6	**0.042**
	1	58.3		86.7	
	2 or more	66.7		60.0	
Social withdrawal	Normal	48.8	0.905	60.5	**0.033**
	Social withdrawn	47.1		83.9	

Data are presented as the mean and standard deviation of participants or number and frequency (* $p < 0.05$, Chi-square), Bold represent significant differences.

成果発表：（予定を含めて口頭発表、学術雑誌など）

・Oral Function Status and Associated Factors in Japanese Older Adults Receiving Outpatient Dental Care

Tin Zar Tun, Kaung Myat Thwin, Sachiko Takehara, Hiroshi Ogawa

15th International Conference of Asian Academy of Preventive Dentistry

(November 8–11, 2023) Hong Kong

・We finished data collection, and part of our study results in the manuscript have been submitted to the Oral Sciences International Journal.