Original Article

GENDER DIFFERENCES IN ORAL HEALTH BEHAVIOR AND GENERAL HEALTH HABITS IN AN ADULT POPULATION

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Abstract

This study aimed to evaluate gender differences in oral health behavior and general health habits in adults. The subjects were 207 males and 196 females aged 20–64 yrs who were public officials in the city or town administrations in Chiba Prefecture, Japan. The questionnaire survey included three items: (1) self assessment of oral health status, (2) oral health behavior and (3) general health habits. Statistical analysis was performed using the chi-square test for differences of responses between males and females. The proportion of subjects with cognition of symptoms of oral disease ranged from 14.3 to 23.0%. The percentage of those who had not visited a dentist in the last year were 52.7% for males and 36.7% for females ($p < 0.01$). Subjects who brushed their teeth almost every day at bed time were 60.9% of males and 88.8% of females ($p < 0.01$). A comparison of the numbers of positive responses regarding general health habits found no differences in the distribution of general health habits score between males and females. Examining the relationship between oral health behavior and general health habits revealed that males with general habit high scores tended to have positive oral hygiene behavior. These results support the thesis that gender specificities in oral health depend on individual attitudes to oral health and dental utilization. In addition, understanding the cognitive factors of males and females would accelerate dental approaches to modifying oral health behavior of both groups, thus contributing to lifelong health maintenance.

Key words: Oral health behavior—Gender differences—Health habits—
Self assessment of oral health—Adults

INTRODUCTION

Oral health behavior in adults is essential to daily life and to promoting growth and development from birth to adults⁸⁾. This study aimed to clarify the gender differences which

might be involved the dental professional attitude to patients in utilization of dental services and to determine whether oral health behavior is associated with general health habits or not.

Several studies of oral health behavior have

Fig. 1 Conceptual framework of oral health behavior in adults

focused on gender differences regarding the cognitive process of oral health associated with dental health knowledge^{1,7,16,24}, self assessment of health status^{18,21,23}, dental anxiety^{5,6,12,17,19}, individual psychological characteristics²² and acceptance behavior for dental care, which are categorized into oral hygiene behavior^{20,26}, food choice and food acceptance behavior⁴ and dental attendance behavior¹⁰. Most previous studies have supported the findings that females have higher dental anxiety^{5,17}, more frequent utilization of dental care services¹³ and more positive response in oral hygiene behavior²⁷. However there are few studies focused on the relationship between oral health behavior and general health habits.

Breslow *et al.* noted a relationship between general health habits and mortality in adults in the Alameda studies^{2,3}. Individual health practices, such as smoking, weight in relation to desirable standards for height, drinking, hours of sleep, regularity of meals and physical activities, were related to mortality in the expected direction³. It is also generally recognized that some chronic diseases in adults can be controlled by changing routine health habits by improving which are reflected of health education during individual life cycle. As an approach to clarify the oral health behavior in adults, we hypothesized that gen-

der differences in oral health behavior derive from general routine health habits, individual dental attitudes, various environmental factors and health education backgrounds.

SUBJECTS AND METHODS

This survey was carried out from January to March, 1996, and was conducted by a questionnaire among 405 adults aged 20 to 64 yrs old. The subjects in this study were public officials of municipalities in Chiba Prefecture, Japan. The conceptual framework of oral health behavior in adults is shown in Fig. 1. This behavior plays important roles throughout a person's life span. Individual perception of health status also depends on social and environmental status and changes may depend upon gender, age, community, or occupational category. Therefore, the subjects of this study were selected from the same work place in one prefecture in Japan. The numbers of subjects were 16 persons (7 males and 9 females) aged under 24 yrs, 82 persons (42 males and 40 females) aged 25–34 yrs, 119 persons (56 males and 63 females) aged 35–44 yrs, 114 persons (57 males and 57 females) aged 45–54 yrs and 74 persons (46 males and 28 females) aged 55–64 yrs. The age distribution of subjects was fairly uniform between

Table 1 Gender differences in self assessment of oral health status and oral health behavior

	males		females		
	n = 208		n = 197		
	n	%	n	%	
Self assessment of oral health status					
Satisfaction with chewing function and oral appearance (very satisfied, satisfied)					
chewing function	57	27.5	51	26.0	
oral appearance	28	13.5	32	16.3	
Perception of oral health status					
toothache	36	17.4	45	23.0	
gum bleeding or swelling	44	21.3	36	18.4	
bad breath	40	19.3	28	14.3	
no major complaint	33	15.9	27	13.8	
Oral health behavior					
Acceptance behavior for dental care					
no dental visit during the past year	109	52.7	72	36.7	**
family dentist for dental care	124	59.9	153	78.1	**
regular dental check-up	7	3.4	25	12.8	**
Oral hygiene behavior (almost every day)					
tooth brushing after lunch	30	14.5	96	49.0	**
tooth brushing before going to bed	126	60.9	174	88.8	**
using interdental brush	50	24.2	44	22.4	
mouth rinsing	8	3.9	11	5.6	
using fluoride toothpaste	29	14.0	40	20.4	
Food choice and food acceptance behavior					
eat between meals (almost every day)	15	7.2	71	36.2	**
eat between meals (occasionally)	74	35.7	82	41.8	

** Chi-square test for difference in proportions of males and females: $p < 0.01$

males and females. The total number of subjects was 405, with 208 males and 197 females.

The questionnaire consisted of four items. Two items were concerned with perception of oral health and oral health behavior. The other two items concerned general health behavior. The perception of oral health involved subjective conditions of oral health in this study. These consisted of two items (satisfaction with chewing function and appearance of teeth and mouth). Oral health behavior was investigated under three categories, acceptance of dental care, tooth cleaning behavior, and food choice/food acceptance behavior. The questionnaire about general health asked about subjective conditions of general health and health habits. Statistical analysis of these data was performed with the chi-square test.

RESULTS

Table 1 shows the gender differences in self assessment of oral health status and oral health behavior. The proportion of subjects with cognition of subjective symptoms of oral disease ranged from 13.8 to 21.3%. The proportion of subjects who were satisfied with chewing function and oral appearance ranged from 13.5 to 27.5%. The proportion who perceived toothache, gum bleeding or swelling, or bad breath ranged from 17.4% to 21.3% in males and from 14.3% to 23.0% in females. The proportion of subjects with no dental visits during the past year was 52.7% in males and 36.7% in females. Those having a family dentist for dental care (personal dentist) were 59.9% of males and 78.1% of females. For regular dental check-ups, 3.4% of males responded positively and 12.8% of females. In all of these acceptance behaviors

Table 2 Gender differences in self assessment of general health status and health habits

	males		females	
	n = 208		n = 197	
	n	%	n	%
Self assessment of general health status				
good	126	60.9	123	62.8
General health habits				
never smoke cigarettes	74	35.7	64	32.7
moderate or no use of alcohol	38	18.4	41	20.9
regular physical exercise	61	29.5	36	18.4
maintaining proper weight	58	28.0	74	37.8
7–8 hr sleep/day regularly	87	42.0	58	29.6
eating breakfast every day	95	45.9	120	61.2
not eating between meals	64	30.9	36	18.4
Score of general health habits				
0–3	166	79.8	153	77.7
4–5	32	15.4	37	18.8
6–7	10	4.8	6	3.0

* Chi-square test for difference in proportions of males and females: $p < 0.05$

** Chi-square test for difference in proportions of males and females: $p < 0.01$
 Score of general health habits; Number of positive responses to the following items: never smoke cigarettes, moderate or no use of alcohol, regular physical exercise, maintaining proper weight, 7–8 hr sleep/day regularly, eating breakfast every day, not eating between meals

for dental care, females revealed a significantly higher rate ($p < 0.01$) of those who practiced tooth brushing before going to bed almost every day constituted, 60.9% were males and 88.8% were females. This gender difference was also significant ($p < 0.01$). On the other hand, the proportion of subjects who ate between meals almost every day was 36.2% in females. This proportion was significantly higher than that in males ($p < 0.01$). For questions about using an interdental brush, mouth rinsing, and using fluoride toothpaste, from 3.9% to 24.2% of subjects answered yes. There were no significant differences between males and females in these oral hygiene behaviors.

The analysis of gender differences in self assessment of general health status and health habits is shown in Table 2. The proportion of subjects who felt healthy was 60.9% of males and 62.8% of females. The subjects who maintained the seven health habits in daily life proposed by Breslow *et al.* ranged from 18.4% to 45.9% for a given habit in males and from 18.4% to 61.2% for a given habit in females.

The proportion of subjects who never smoked cigarettes was around 30% in both males and females. The proportion with moderate or no use of alcohol was 18.4% in males and 20.9% in females. These proportions were not significantly different by gender. With regard to the health habits of regular physical exercise, 7–8 hr sleep per day regularly and not eating between meals, male subjects had significantly higher rates than females ($p < 0.01$). On the other hand, females had higher rates of maintaining proper weight and eating breakfast every day ($p < 0.05$, $p < 0.01$). In assessment of the number of positive responses concerning the seven health habits, 79.8% of males had score 0–3, 15.4% had score 4–5, and 4.8% had score 6–7. Among females, 77.7% had score 0–3, 18.8% had score 4–5, and 3.0% had score 6–7. No clear differences were found between the general health habit scores of males and females.

The relationships between the scores of general health habits and oral health behavior are summarized in Table 3. Among males,

Table 3 Relationship between score of general health habits and oral health behavior

	males						females					
	score of general health habits ¹⁾						score of general health habits ¹⁾					
	0-3		4, 5		6, 7		0-3		4, 5		6, 7	
	n	%	n	%	n	%	n	%	n	%	n	%
Oral health behavior												
no dental visit during the past year	85	51.2	19	59.4	5	50.0	56	36.6	13	35.1	3	50.0
family dentist for dental care	95	57.2	22	68.8	7	70.0	119	77.8	30	81.1	4	66.7
regular dental check-up	5	3.0	1	3.1	1	10.0	21	13.7	2	5.4	1	16.7
tooth brushing after lunch ²⁾	19	11.4	8	25.0	3	30.0	73	47.7	19	51.4	1	16.7
tooth brushing before going to bed ²⁾	92	55.4	25	78.1	9	90.0	137	89.5	32	86.5	5	83.3
using interdental brush ²⁾	40	24.1	8	25.0	2	20.0	33	21.6	10	27.0	2	33.3
mouth rinsing ²⁾	5	3.0	2	6.3	1	10.0	9	5.9	2	5.4	0	0.0
using fluoride toothpaste ²⁾	19	11.4	10	31.3	0	0.0	33	21.6	6	16.2	1	16.7

¹⁾Score of general health habits: Number of positive responses to the following items: never smoking cigarettes, moderate or no use of alcohol, regular physical exercise, maintaining proper weight, 7-8hr sleep/day regularly, eating breakfast every day, not eating between meals

²⁾almost every day

the proportion with no dental visit during the previous year was around 50% in all score groups. Among females, this health behavior was around 30% in the score 0-3 and score 4-5 groups and 50.0% in the score 6-7 group. For use of a family dentist for dental care, the low-score group (0-3) indicated 57.2% use and the high-score group (6-7) indicated 70.0% use in males. While the tendency toward increased use of a family dentist with increasing general health habit score was found in males, there were no such tendency in females. Similar tendencies were found in males and females for regular dental check-up and tooth brushing after lunch and before going to bed. In males, the highest positive rates of regular dental check-up and tooth brushing after lunch and before going to bed were found in the score 6-7 group. In females, there were no apparent differences among general health habit score groups for regular dental check-up and tooth brushing behavior before going to bed. With regard to tooth brushing after lunch the female subjects who scored 0-3 had a higher rate than the group with health habit score 6-7. With regard to using an interdental brush, mouth rinsing and fluoride toothpaste, there were no clear relationships between these oral

hygiene behaviors and health habit scores in males or females.

DISCUSSION

Human behavioral science has developed studies of health behavior. Early studies of this behavior started from the field of dental research. In 1953, Janis *et al.* reported the effect of fear arousing communications on the dental health behavior¹⁴⁾. Kegeles analyzed some reasons why people do or do not seek dental care¹⁵⁾. This study was reflected in the Health Belief Model by Rosenstock²⁵⁾. Dental anxiety studies have also examined one of the factors associated with patient attitudes to dental professions and dental treatment. In 1969, Corah reported that females were over-represented in neurotic categories involving anxiety, worry and fear⁵⁾. Further, Liddell and Locker pointed out that gender differences in dental anxiety were likely to be influenced by the perception and meaning of painful experiences¹⁷⁾. Females generally more frequently utilize of dental care services than males¹⁴⁾. One factor explaining this is the fact that females are more likely to show compliance behavior than males¹⁰⁾. In addition,

females have a substantially greater tendency to expect a good outcome from dental attendance behavior²⁷⁾ and more frequently perform daily tooth brushing than males in oral hygiene behavior¹⁰⁾.

Syrjaelae *et al.* reported that the logistic regression model showed that sex and basic education were the most significant variables related to daily brushing²⁸⁾. Macgregor *et al.* proposed that males equated use of floss with health-related behaviors, but females associated it more with cleanliness behavior, i.e., with the frequencies of washing hands after visiting the lavatory and bathing²⁰⁾.

In this study, there were no significant differences in oral health perception between males and females. Dental attendance behavior is likely to be influenced by time allowances for leaving the workplace⁹⁾. Although the subjects in this study were all city or town administration workers, females had more positive responses for dental attendance behavior than males. This finding demonstrated that females appeared to rely more on dental visits for coping with their dental complaints than males. On the other hand, females performed more active daily tooth brushing than males, but were no more active than males in using an interdental brush. Frequent users of dental care might be more motivated about dental preventive methods. Nevertheless, there were no significant differences between males and females with regard to using an interdental brush, mouth rinsing, and tooth brushing with fluoride toothpaste. Tooth brushing behavior may be determined during childhood, while the use of other dental preventive methods may be established later and may be more susceptible to the interventions of dental practitioners.

There were no clear gender differences in the distribution of general health habits score. However, when comparing oral health behavior with general health habits, those males who had higher general health habit scores were more likely to perform daily tooth brushing. However in females, there was no apparent relationship between tooth brushing behavior and general health habit scores.

The tooth brushing behavior of females may be influenced by other factors, such as their attitude to dental appearance and highly outcome expectancy for dental care.

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