

## Correlation between Dental Anxiety and Self-Efficacy in Outpatients

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## Abstract

**Objective:** To explore the correlation between dental anxiety and self-efficacy in outpatients.

**Methods:** A cross-sectional survey was conducted to select 222 outpatients at the Department of Stomatology in a Class III A hospital in Shanghai from October 2021 to January 2022. Outpatients were assessed using a general situation questionnaire, the oral self-efficacy scale (SESS), and the modified dental anxiety scale.

**Results:** The SESS score of the oral outpatients was  $59.86 \pm 7.7$ , which indicated a medium level of self-care efficacy. The balanced diet health care efficacy had the lowest score ( $19.72 \pm 3.45$ ). There was a negative correlation between the dental anxiety score and oral health care efficacy ( $r=-0.192$ ,  $P=0.004$ ). Multiple linear regression analysis showed that regular oral examination was the influencing factor of oral health care efficacy.

**Conclusion:** Improving oral health care self-efficacy can reduce the level of dental anxiety.

**Keywords:** Dental anxiety; Self-efficacy; Oral health; Dental clinic

## Introduction

The results of the fourth nationwide oral health survey in 2015 showed that the prevalence of oral diseases in China is as high as 97.6%, and that the prevalence of dental anxiety is 41% [1]. Dental anxiety refers to different degrees of worry, tension, and fear in patients during the process of oral diagnosis and treatment, which is manifested by low cooperation with the process of medical treatment; the avoidance of oral care, diagnosis, and treatment; or even cancellation of diagnostic and treatment appointments. At the same time, patients with dental anxiety usually have poor oral health self-management efficiency [2,3]. In the field of stomatology in China, there are few studies on the correlation between dental anxiety and self-management efficiency of oral health care in outpatients. Oral health self-efficacy mainly refers to the individuals' confidence in self-executing oral health care behaviors to obtain sufficient oral health. Better self-efficacy management can improve patients' own health behaviors, enhance regular visits to the dentist, and improve self-care compliance, which is of great significance for increasing the effectiveness of treatment in patients [4,5].

Therefore, this study analyzed the dental anxiety and self-care efficacy of oral outpatients to provide a reference basis for improving the health awareness of oral outpatients, reducing the level of dental anxiety, and improving oral care self-efficacy.

## Material and Methods

### Patients

There were 19 independent variables in this study. According to the exploratory factor analysis, the sample size needed to be 5–10 times the number of items. Considering the 10% inefficiency of the sample, the sample size was initially determined to be 222 cases. A cross-sectional survey was conducted to select 222 outpatients in the Department of Stomatology in a Class III A hospital in Shanghai from October 2021 to January 2022. The inclusion criteria were as follows: (1) patient's age was  $\geq 18$  years and  $\leq 85$  years; (2) patients could complete the questionnaire independently; (3) patients and their family members understood the research protocol, volunteered to participate, and signed the informed consent form. The exclusion criteria were as follows: (1)

patients with mental diseases and cognitive impairment; (2) patients with systemic diseases, such as cardiovascular diseases, cerebrovascular diseases, severe diabetes, abnormal coagulation function, patients taking anticoagulant drugs, and cancer patients receiving radiotherapy and chemotherapy; (3) pregnancy; and (4) patients unable to use WeChat. This study was reviewed and approved by the Ethics Committee of the Institute, with the ethics approval number CHE2022-16.

## **Method**

The general situation questionnaire includes gender age, occupation, family income, education level, medical insurance, whether to visit, and whether to undergo regular oral examinations. The Modified Dental Anxiety Scale (MDAS) includes four items: (1) You are visit the dentist today, how do you feel at home? (2) Now you are waiting in the waiting room of the stomatological hospital. How do you feel? (3) Imagine you are in the dental treatment chair, when the dentist is ready to drill your teeth, how do you feel? (4) Imagine you are on the dental treatment chair and seeing the dentist take out the tools to treat your teeth, such as putting instruments, including tweezers, into your mouth and taking out the gauze. How do you feel? The Likert 5-grade scoring method was used, with a total score of 4 to 20 points. An MDAS score of 9 to 12 indicated mild anxiety, and 13 to 20 indicated moderate/severe anxiety” [6,7].

The Self-Efficacy Scale for Self-care (SESS) includes 15 items in three dimensions of oral care, correct brushing, and oral health care. It was prepared by the Japanese scholar Kakudate et al. [8] and tested by the Chinese scholar Wu et al. [5]. The scale adopts the Likert 5-grade scoring method, with a total score of 15–75 points. The higher the score, the better the self-care efficacy; therefore, 15–53 points represents low self-care efficacy, 54–59 points represents medium self-care efficacy, and 60–75 points represents high self-care efficacy. The correlation coefficient of the Chinese SESS retest was 0.922, and Cronbach's alpha was 0.897, showing good reliability and validity [1].

## **Survey method**

After training, a competent nurse with strong professional ability was assigned to distribute a paper questionnaire and to guide the waiting patients to fill it in. After completing the questionnaire, the 225 questionnaires were retrieved, checked, and filled with the complete contents. Three questionnaires with >20% missing content were removed. In total, 222 questionnaires were valid, with a recovery rate of 98.7%.

## **Statistical methods**

SPSS v. 24.0 was used for statistical analysis. The counting data was expressed in frequency and percentage. The measurement data conforming to the normal distribution was expressed as  $\pm$ . The t-test, single factor analysis, and Pearson correlation analysis of dental anxiety and oral self-efficacy were used for the comparison of oral self-efficacy, and logistic regression analysis was used for the multi-factor analysis.  $P < 0.05$  was statistically significant.

## Results

The general information of the study participants is shown in **Table 1**.

**Table 1:** General information of the study participants (n=222).

Project	Number of cases	Percentage
<b>Sex</b>		
Male	92	41.44%
Female	130	58.56%
<b>Age (years)</b>		
18 ≤ age ≤ 44	98	44.14%
45–59	78	35.14%
60 ≤ age ≤ 85	46	20.72%
<b>Education</b>		
Junior high school and below	40	18.01%
High school and junior college	58	26.13%
Bachelor degree or above	124	55.86%
<b>Occupation</b>		
Civil servant or personnel of a public institution	136	61.26%
Worker	40	16.02%
Unemployed	46	20.72%
<b>Family monthly income</b>		
< 1000 RMB	58	26.13%
≥ 10000 RMB	114	51.35%
Unclear	50	22.52%
<b>Initial diagnosis</b>		
Yes	118	53.15%
No	104	46.85%
<b>Medical insurance</b>		
Shanghai medical insurance	148	66.67%
Non-local medical insurance	74	33.33%
<b>Regular oral examination</b>		
Yes	73	32.89%
No	149	67.11%

### SESS score

The SESS score of each dimension contributed to the total score, which was  $59.86 \pm 7.70$ , indicating a moderate level of self-care efficacy. The oral self-care efficacy score was  $20.11 \pm 3.20$ , the correct brushing self-care efficacy score was  $20.03 \pm 2.83$ , and the balanced diet health efficacy score was  $19.72 \pm 3.45$ ; the score of the balanced diet health efficacy was the lowest.

### Single factor analysis of oral self-care efficacy

The self-care efficacy score of female patients ( $58.89 \pm 8.38$ ) was lower than that of male patients ( $61.22 \pm 6.45$ ;  $P=0.03$ ). The self-care efficacy score of patients with Shanghai medical insurance ( $58.93 \pm 8.11$ ) was lower than that of patients with non-local medical insurance ( $61.70 \pm 6.51$ ;  $P=0.01$ ). The self-care efficacy of patients with regular oral examination ( $62.93 \pm 5.66$ ) was significantly higher than that of patients without oral examination ( $58.35 \pm 8.14$ ) ( $P=0.00$ ) (Table 2).

**Table 2:** Single factor analysis of oral self-care efficacy (n=222).

Project		Number of cases	Score	t/F	P
Sex	Male	92	$61.22 \pm 6.45$	4.99	0.03
	Female	130	$58.89 \pm 8.38$		
Age (years)	$18 \leq \text{age} \leq 44$	98	$59.90 \pm 6.96$		
	45-59	78	$59.35 \pm 9.37$	2.47	0.09
	$60 \leq \text{age} \leq 85$	46	$59.20 \pm 5.55$		
Education	Bachelor degree or above	124	$59.13 \pm 8.17$		
	High school and junior college	58	$60.22 \pm 7.57$		0.08
Occupation	Junior high school and below	40	$59.73 \pm 6.51$		
	Civil servants or personnel of a public institution	136	$59.77 \pm 7.67$		
	Worker	40	$61.70 \pm 7.84$	1.87	0.15

	Unemployed	46	58.50 ± 7.56		
Family monthly income	< 1000 RMB	58	57.95 ± 8.68		
	≥ 10000 RMB	114	60.22 ± 6.95	2.75	0.07
	Unclear	50	61.24 ± 7.91		
Initial diagnosis	Yes	118	60.18 ± 7.70	0.04	0.51
	No	104	59.49 ± 7.74		
Medical insurance	Shanghai medical insurance	148	58.93 ± 8.11	6.52	0.01
	Non-local medical insurance	74	61.70 ± 6.51		
Regular oral examination	Yes	73	62.93 ± 5.66	18.69	0.00
	No	149	58.35 ± 8.14		

### Logistic regression analysis of oral self-care efficacy

Factors showing a significant difference in the univariate analysis, which included sex (male=1, female=2), Shanghai medical insurance (yes=1, no=0), and regular oral examination (yes=1, no=0) were considered as independent variables, in addition to the oral health care efficacy score as the dependent variable, in the orderly logistic regression analysis, as shown in [Table 3](#).

**Table 3:** Logistic regression analysis of oral self-care efficacy (n=222).

Variable	Regression coefficient	Standard error	X <sup>2</sup>	p	OR (odd ratio)	95%CI (Confidence interval)
Constant	-0.739	0.586	0	0.207	-	-
Sex	-0.323	0.412	1.786	0.433	0.409	0.323–1.625
Medical insurance	0.751	0.454	3.122	0.098	2.119	0.087–5.516
Regular oral	-2.223	0.631	23.70	0.000	0.018	0.031–0.373

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### Correlation analysis between dental anxiety and oral self-care efficacy

Dental anxiety scores were negatively correlated with oral health care efficacy ( $r = -0.192$ ,  $P=0.004$ ), as shown in [Table 4](#).

**Table 4:** Correlation between dental anxiety and oral health care efficiency (n=222).

Project	Oral self-care efficacy score	Self-care efficacy score of correct brushing	Balanced diet health care efficacy score	Total score of oral health care efficiency
Dental anxiety	-0.117	-0.118	-0.215	-0.192
P	0.083	0.08	0.001	0.004

## Discussion

### Current situation of oral self-care efficacy of oral outpatients

The results of this study show that the oral health self-efficacy score of oral outpatients ( $59.86 \pm 7.71$ ) was at the middle level, among which the balanced diet and health care self-efficacy score was the lowest ( $19.72 \pm 3.45$ ), and the oral health care self-efficacy score was the highest. This finding is consistent with the research results of Kakudate et al. [9], and in contrast to the research results of Yang et al. [10] regarding the oral health self-efficacy of patients with chronic periodontitis. The reasons may be related to the severity of the disease, economic level, and eating habits of the participants. With the advent of the era of universal health, residents' awareness of oral health care has gradually increased; they believe that brushing their teeth can prevent oral diseases. A strong sense of oral self-efficacy has a positive impact on oral health behavior, such as brushing teeth and seeing dentists at a higher frequency [11]. If a participant's family has a high economic and cultural level, they can often correctly brush their teeth and visit a doctor in time. However, the impact of a balanced diet on oral health has not received much attention. In this study, 33.78% of the respondents believed that it was unnecessary to reduce the intake of snacks outside the main meals, and 25.22% believed that it was unnecessary to reduce the intake of sweets. It is suggested that when carrying out oral health education activities, oral health care personnel should take the self-efficacy theory as the basis; the premise should be improving the self-efficacy of patients with oral diseases by encouraging them to see a doctor and brush their teeth correctly. In addition, oral health education should strengthen the health education on a balanced diet for patients with oral diseases, so that patients can realize the importance of a balanced diet for oral health care, thus improving the oral health self-care efficiency of patients.

### **Influencing factors of self-care efficacy of oral outpatients**

**Influence of sex on oral self-care efficacy:** The oral self-care score of female patients was lower than that of male patients. Male patients have a higher intake of high-fat foods, and women prefer sweet foods [12]. A potential reason for this difference is that women in the survey population were more prone to anxiety, which may be related to the increased experience of psychological conflict caused by women's delicate and sensitive psychological state. In addition, women are more vulnerable. Once stimulated by the surrounding environment, women tend to have emotional fluctuations, leading to the occurrence of anxiety. Some women in a state of anxiety are relieved by eating desserts or snacks [13]. In the clinical diagnosis and treatment of the oral cavity, some anxious female patients should be psychologically dredged and guided to read the oral health manual, watch the oral disease operation video, and become familiar with the process of oral cavity diagnosis and treatment to reduce the levels of anxiety and improve the compliance of female patients in the process of diagnosis and treatment.

**Impact of medical insurance on the self-efficacy of oral health care:** As a diversified first-tier city in China, Shanghai plays a leading role in the catering industry. Some scholars have found that the food consumption in Yuyuan Road is mainly concentrated on coffee, muffins, desserts, and high sugar foods [14]. Yuan et al. dynamically monitored the dietary behavior of residents in the Baoshan District of Shanghai for 6 years, and the residents' intake frequency of sweet and pickled foods was found to be too high [12]. The oral self-care efficacy of patients with Shanghai medical insurance was lower than that of patients with foreign medical insurance, which may be related to eating habits. Shanghai residents prefer sweet food; therefore, the score of balanced diet was lower than that of patients with medical insurance in other places. It is suggested that oral medical staff should carry out individualized health education for regional patients when providing corresponding continuous services to patients.

**Impact of regular check-ups on oral self-efficacy:** The oral health care efficacy score of patients who had regular oral examinations was higher than that of patients who had irregular oral examinations. Patients can receive comprehensive health guidance from medical staff, develop good oral health behaviors, and improve their own quality of life by regularly going to the oral clinic for an oral examination. Different scholars, through standardized health education or standardized group cognitive behavior and other intervention methods, such as WeChat groups and official accounts, promote and urge patients to quit smoking and drinking, eat healthily, and return to the hospital regularly for further consultation in order to improve medical compliance behavior and patients' oral self-care efficiency [15]. It is suggested that oral health care staff should strengthen the guidance of oral health knowledge for the patients, so that they can establish a correct understanding of oral treatment and actively improve oral health care efficiency.

### **Correlation between dental anxiety level and self-efficacy of oral health care**

The study showed that the dental anxiety score was negatively correlated with oral health care efficacy ( $r = -0.192$ ,  $P=0.004$ ). The higher the oral health care efficacy, the lower the dental anxiety level. A high level of dental anxiety will increase the patient's resistance to treatment. When analyzing the reasons, nervousness, anxiety, or fear regarding the process of treatment can easily lead to the formation of negative thoughts on oral treatment. The behavior of the patient will often show an increase in individual sensitivity, a decline in

tolerance, avoidance of treatment, a reduction in the return visit rate, and poor compliance with oral health care behavior. This will lead to deterioration in oral health, which forms a vicious circle, further reducing the confidence of patients regarding regular oral visits and oral self-care. According to the health belief model theory [16], the cognitive level significantly affects the daily health care behavior and medical experience, and further affects the confidence level of individuals to adhere to health behaviors and pursue health outcomes. It is suggested that dental medical staff should pay more attention to patients with high dental anxiety, actively create a good medical environment and atmosphere, constantly improve their professional level, strengthen communication, provide psychological support, reduce or eliminate the patient fear, and promote disease recovery and maintenance of the effects of the treatment.

## Conclusion

The oral health self-efficacy of oral outpatients is at the middle level, and gender, whether or not regular oral examination and medical insurance are the factors that affect the oral health self-efficacy of oral outpatients. Women and local patients who do not participate in oral examination have lower oral health care efficacy. The lower the oral health care efficacy, the higher the dental anxiety level of patients. It is suggested that medical staff should focus on strengthening targeted health education for dental anxiety patients, formulating personalized intervention programs, and improving the oral health care efficiency of patients. Due to the limited conditions, this study only selected the oral outpatients from a Class III general hospital in Shanghai. It is suggested to carry out a multi-center and large sample study in the future to improve the reliability of the research conclusions. In addition, a variety of effective intervention methods can be explored in the future research to improve the dental anxiety level of patients and enhance the self-efficacy of oral health care of patients.

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