

# Social Appearance Anxiety and Oral Health-Related Quality of Life in Middle-Aged Adults with Implant Therapy

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## Abstract

**Introduction:** The success of implant therapy is strongly related to the perceptions and expectations of the patients.

**Aim:** This study aimed to assess the level of social appearance anxiety and oral health-related quality of life in middle-aged adults with implant-supported fixed prostheses and compare with individuals who have tooth loss without any prosthetic rehabilitation or who have natural teeth.

**Materials and methods:** The participants ( $n=292$ ) were divided into three groups: group 1, individuals with implant-supported fixed dental prostheses; group 2, individuals with tooth loss; and group 3, individuals with totally natural teeth. A questionnaire form including basic questions, Social Appearance Anxiety Scale (SAAS), and Oral Health Impact Profile-14 (OHIP-14) was distributed among patients.

**Results:** Group 2 showed a significantly higher level of SAAS and OHIP-14 scores compared with groups 1 and 3 ( $p<0.001$ ). The SAAS scores were similar between groups 1 and 3, with no significant differences. The median OHIP-14 score was the lowest in group 3. For all groups, education was related to SAAS and OHIP-14 scores ( $p=0.037$  and  $0.002$ , respectively). The SAAS and OHIP-14 scores were significantly and positively related ( $p<0.001$ ,  $r=0.501$ ).

**Conclusions:** It was concluded that patients with tooth loss had higher levels of SAAS and OHIP-14 scores. Besides, the SAAS scores were similar for patients with implant-supported fixed prostheses and those with natural teeth. Middle-aged adults with higher educational levels tended to present better oral health-related quality of life and lower social appearance anxiety.

## Keywords

implant therapy, middle-aged adults, Oral Health Impact Profile-14, oral health-related quality of life, social appearance anxiety

## INTRODUCTION

The success of implant therapy is strongly related to the knowledge and expectations of the patients.<sup>[1]</sup> A majority of patients were completely satisfied with implant therapy in terms of functional and aesthetic outcomes of the

treatment.<sup>[2]</sup> Previous studies showed that dental implants followed by prosthodontic rehabilitation improved oral health-related quality-of-life scores for patients with all indications for dental implants.<sup>[3]</sup> Significant improvements in oral health-related quality of life were reported in terms of both aesthetic and functional aspects in patients

with at least one implant in the front dental area.<sup>[4]</sup> Dental implants from a patient perspective were evaluated using open-ended questions, and it revealed that dental implants improved function, self-esteem, and social life.<sup>[5]</sup> A multicenter study reported that a high percentage of patients were expected to have improved social confidence following implant treatment.<sup>[6]</sup>

Social appearance anxiety is a term that expresses an individual's feelings when his/her physical appearance is evaluated by other individuals.<sup>[7]</sup> Oral health-related quality of life is another multidimensional concept used to assess an individual's comfort while eating, sleeping, and engaging in social interactions, self-esteem, and satisfaction concerning his/her oral health.<sup>[8-10]</sup>

Although many distinguished studies assessed the relationship of implant therapy with oral health-related quality of life and biosocial factors, no study reported on the social appearance anxiety and oral health-related quality of life simultaneously in middle-aged adults.

## AIM

The aim of the present study was to compare the levels of social appearance anxiety and oral health-related quality of life in middle-aged adults who had implant-supported fixed dental prostheses for at least two years without any complaints to those of individuals who had tooth loss without any prosthetic rehabilitation or who had natural teeth.

## MATERIALS AND METHODS

This study was approved by the University of Health Sciences / Gülhane Scientific Research Ethics Committee with the registration number 2020/371. It was performed following the guidelines of the Declaration of Helsinki. It was conducted on 292 middle-aged adult patients: Individuals between the ages of 44 and 65 and who met the characteristics of one of the three groups determined as: have implant-supported fixed dental prostheses for at least two years without any complaints, have tooth loss without any rehabilitation, or have natural teeth were included in the study. Patients wearing removable dentures were excluded. The age range classification was determined as 44–65 years, proposed by Medical Subject Headings (MeSH) for the study.<sup>[11]</sup> Data were collected from October 2020 to June 2021. The three groups were evaluated by researchers according to clinical and radiographical examinations. Patients were informed about the study protocol, and written informed consents were obtained. The first part of the questionnaire form includes basic questions on demographic data including age, sex, education level, and marital status. In the second part of the questionnaire form, the Social Appearance Anxiety Scale (SAAS) and Oral Health Impact Profile-14 (OHIP-14) were included that aim to determine social appearance anxiety and oral health-related quality of life.

The sample size calculation was performed using the G power statistical software considering the primary outcome of the present study, which was the social appearance anxiety assessment. With an alpha risk of 0.05 and a power of 90%, a minimum sample size of 87 patients in each group was required to obtain a significant difference. Therefore, a minimum of 90 patients were included in each group.

The SAAS was created by Hart et al.<sup>[7]</sup> to measure the anxiety about being evaluated by others because of appearance. The use of SAAS has been proven as an effective measure of social appearance anxiety.<sup>[12]</sup> The scale contained 16 questions related to how participants sensed their appearance. For each question, a score ranging from 1 to 5 was given. The scores ranged between 16 and 80, and higher scores reflected higher social appearance anxiety.

The OHIP is a scale that measures people's perceptions of the impact of oral conditions on their well-being.<sup>[9]</sup> OHIP-14 was developed as the short-form version of OHIP, which is a well-known measure with good reliability and validity.<sup>[10]</sup> The scale comprised 14 questions; for each question a score ranging from 0 to 4 was given, and higher scores reflected the deterioration of oral health-related quality of life.

## Statistical analysis

Statistical analysis was performed using version 23 of IBM-SPSS for Windows (SPSS Inc, IL, USA). For statistical analysis, the Shapiro-Wilk, Mann-Whitney *U*, Kruskal-Wallis, and Kolmogorov-Smirnov tests were used. The Shapiro-Wilk ( $n < 50$ ) and Kolmogorov-Smirnov ( $n \geq 50$ ) tests were used to analyze the normality of quantitative variables. The Mann-Whitney *U* test was used for comparing two independent groups and Kruskal-Wallis test for comparing more than two groups. The level of significance for all tests was set at  $p < 0.05$ .

## RESULTS

Data of 292 patients were analyzed. Participants' characteristics are presented in **Table 1**. The participants were divided into three groups: group 1 ( $n=105$ ), individuals with implant-supported fixed dental prostheses; group 2 ( $n=95$ ), individuals with tooth loss without any prosthetic rehabilitation; and group 3 ( $n=92$ ), individuals with totally natural teeth. The mean age of patients was 51.55 years. The age distribution between groups is presented in **Table 2**. The median age of patients in group 3 was significantly lower ( $p < 0.001$ ). The median SAAS and OHIP-14 scores are given in **Table 3**.

The distribution of SAAS and OHIP-14 scores between groups is presented in **Table 4**. Group 2 showed a significantly higher level of SAAS and OHIP-14 scores compared with groups 1 and 3 ( $p < 0.001$ ). The SAAS scores were similar between groups 1 and 3, with no significant differences.

In group 3, the median OHIP-14 scores were the lowest. The SAAS and OHIP-14 scores were significantly and positively related ( $p < 0.001$ ,  $r = 0.501$ ).

No significant correlation was found between sex

and SAAS or OHIP-14 scores ( $p$  values = 0.902 and 0.169, respectively). For all groups, education was related to SAAS and OHIP-14 scores, as shown in **Table 5** ( $p = 0.037$  and 0.02, respectively).

**Table 1.** Values of descriptive statistics

		Frequency	%
Gender	Male	109	37.3
	Female	183	62.7
	Total	292	100.0
Marital status	Married	237	81.2
	Single	55	18.8
	Total	292	100.0
Educational level	Primary school	12	4.1
	Secondary school	8	2.7
	High school	37	12.7
	University	235	80.5
	Total	292	100.0
Group	I: Implant-supported fixed dental prostheses	105	36.0
	II: Tooth loss without any prosthetic rehabilitation	95	32.5
	III: Natural teeth	92	31.5
	Total	292	100.0

**Table 2.** Age distribution between groups

Group	Median (IQR)	Min-Max	Mean ± SD	$\chi^2$	$p$
I	52.00 (12.00)	44.00–65.00	53.09±7.047		
II	51.00 (10.00)	44.00–65.00	51.75±6.390	17.044	<0.001
III	45.50 (10.00)	44.00–65.00	49.59±6.844		

SD, Standard deviation.

**Table 3.** Median SAAS and OHIP-14 scores

	Mean ± SD	Minimum	Maximum	Median (IQR)
OHIP-14 Score	9.37±7.744	0.00	41.00	7.00 (9.00)
SAAS Score	24.28±9.659	16.00	69.00	21.00 (9.00)

**Table 4.** SAAS and OHIP-14 score distribution among groups

	Group	Median (IQR)	Min-Max	Mean ± SD	$\chi^2$	$P$
OHIP-14 Score	I	8.00 (9.00)	0.00–31.00	9.30±6.274		
	II	11.00 (13.00)	0.00–41.00	13.38±9.661	49.232	<0.001
	III	5.00 (5.00)	0.00–24.00	5.33±4.127		
SAAS Score	I	20.00 (6.00)	16.00–45.00	22.40±6.566		
	II	24.00 (18.00)	16.00–69.00	29.72±13.237	28.823	<0.001
	III	20.00 (6.50)	16.00–35.00	20.82±4.581		

**Table 5.** Educational distribution between SAAS and OHIP-14 scores

	Educational level	Median (IQR)	Min-Max	Mean ± SD	$\chi^2$	$P$
OHIP-14 Scores	Primary school	8.50 (16.50)	0.00–26.00	11.33±9.661		
	Secondary school	20.50 (16.50)	8.00–41.00	22.13±11.294	14.961	0.002
	High school	8.00 (11.00)	0.00–37.00	11.11±8.752		
	University	7.00 (7.00)	0.00–36.00	8.57±6.906		
SAAS Scores	Primary school	23.00 (10.50)	17.00–39.00	24.58±7.229		
	Secondary school	36.00 (17.50)	16.00–52.00	36.13±12.112	8.477	0.037
	High school	22.00 (10.00)	16.00–61.00	24.54±9.979		
	University	21.00 (8.00)	16.00–69.00	23.82±9.425		

## DISCUSSION

Treatment with dental implants has become a well-documented and validated option in dentistry and is increasingly used worldwide.<sup>[13,14]</sup> Over the years, researchers have focused on the technical aspects of implant dentistry, such as the survival rate, surface characteristics, and surgical/prosthetic procedure. However, the success of the implant therapy is strongly related to the knowledge and expectations of the patients.<sup>[1]</sup> In recent years, dental professionals have focused on patient perception regarding expectations, needs, satisfaction, and oral health-related quality of life.<sup>[3,6]</sup> As part of achieving successful treatment, it is essential to take into consideration the understanding and expectations of patients.<sup>[15]</sup>

Tooth loss without replacement of missing teeth reduces the physical index of quality of life among elders.<sup>[16]</sup> Oral health-related quality of life includes a subjective evaluation of individuals' oral health and functional and emotional well-being.<sup>[17]</sup> Larsson et al.<sup>[18]</sup> showed that orofacial appearance had a moderate impact on oral health-related quality of life in patients with aesthetic-related needs. Patient-specific dental implants improved oral health-related quality of life in patients with severe bone deficiencies related to tumor therapy.<sup>[19]</sup> Significant improvements in oral health-related quality of life have been reported in terms of both aesthetic and functional aspects in patients with at least one implant in the front dental area.<sup>[4]</sup> However, single molar implants had no impact on aesthetics and self-esteem.<sup>[15]</sup> Personality profiles also had an impact on patients' oral health-related quality of life following implant treatment.<sup>[20]</sup>

Social appearance anxiety is defined as the anxiety that an individual feels when others evaluate his/her overall appearance. Self-perceived image of dental aesthetics can significantly affect an individual's well-being, which can be related to his/her self-confidence.<sup>[21]</sup> Improvement in aesthetics has been defined as one of the main reasons by patients before dental implant therapy.<sup>[22]</sup>

Age of the patient could have influence on social appearance perception. Although teenage individuals are sensitive about their facial aesthetics<sup>[23]</sup>, older people also have some image problems. Furthermore, it has been emphasized that individuals in their 50s have body image dissatisfaction related to changes with growing older.<sup>[24]</sup> Previous studies focused on problems related to body image dissatisfaction in midlife adults.<sup>[25]</sup> Middle-age is a different age category consisting of adult and comparatively older people, when the age-related changes appear in terms of different physical and orofacial conditions. This is a critical age group concerned about their body image and may suffer from unhealthy standards.<sup>[26]</sup> Therefore middle age adults were selected in our study and age range was defined as individuals aged 44–65 years, as proposed by MeSH.<sup>[11]</sup>

Grey et al.<sup>[27]</sup> reported that individuals expected implants to restore their oral-related quality of life to “normal.” Patients expected that fixed implant-supported prostheses

were as good as natural teeth.<sup>[28]</sup> Pommer et al.<sup>[29]</sup> reported higher satisfaction scores in patients with implant-supported rehabilitation compared with those with conventional fixed or removable dentures. The aesthetic of implant-supported fixed dental prostheses has been highly rated by patients.<sup>[30]</sup> Ali et al.<sup>[31]</sup> reported that implant-supported fixed dental prostheses caused greater improvements in oral health-related quality of life than tooth-supported fixed dental prostheses and removable partial dentures.

In the present study, we hypothesized that oral health-related quality of life and social appearance anxiety in patients with implant-supported fixed dental prostheses could be different from those in individuals who had tooth loss without any prosthetic rehabilitation or who had natural teeth. It was found that patients with tooth loss had higher levels of SAAS and OHIP-14 scores compared with those with natural teeth and implant-supported fixed prostheses. However, social appearance anxiety scores were similar for patients with implant-supported fixed dental prostheses and those with natural teeth. The results of the present study supported previous findings in that implant-supported fixed dental prostheses had a similar impact on patient perception as natural teeth.

This study had several limitations. Firstly, the personality traits of participants were not examined. Secondly, factors that might influence the perception and anxiety levels of individuals as the duration of tooth loss, region of tooth loss, previous removable denture experience, and etiological reason for extraction were not examined for participants in group 2.

## CONCLUSIONS

This study results suggested that middle-aged adult patients with implant-supported fixed dental prostheses and those with natural teeth had similar oral health-related quality of life and social appearance anxiety scores. Moreover, these scores were associated with better biosocial performance in terms of oral health-related quality of life and social appearance anxiety than in patients with tooth loss.

Implant treatment has great importance for overcoming the functional and aesthetic needs in current dentistry in terms of restoring a youthful appearance and improving self-perception. More comprehensive studies are warranted to investigate the biosocial effects of implant treatment among patients with different age groups are needed.

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## Competing interest

The authors have declared that no competing interests exist.

## Author contributions

Ü.T.K.: Conception and design, acquisition of data and analysis and interpretation of data; S.S.E.: Conception and design, literature search, and writing of the manuscript. All authors have agreed on the final version of the manuscript.

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# Социальная тревога и качество жизни, связанное со здоровьем полости рта, у взрослых среднего возраста после имплантационной терапии

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## Резюме

**Введение:** Успех имплантационной терапии тесно связан с восприятием и ожиданиями пациентов.

**Цель:** Это исследование было направлено на оценку уровня социальной тревожности и качества жизни, связанного со здоровьем полости рта, у взрослых среднего возраста с несъёмными протезами с опорой на имплантаты и сравнение с людьми, которые потеряли зубы без какой-либо ортопедической реабилитации или имеют естественные зубы.

**Материалы и методы:** Участники ( $n=292$ ) были разделены на три группы: 1-я группа – лица с несъёмными зубными протезами на имплантатах; 2 группа – лица с потерей зубов; и группа 3, люди с полностью естественными зубами. Пациенты заполнили анкету, включающую основные вопросы, шкалу социальной тревоги (SAAS) и профиль воздействия на здоровье полости рта-14 (OHIP-14).

**Результаты:** Группа 2 показала значительно более высокий уровень баллов по SAAS и OHIP-14 по сравнению с группами 1 и 3 ( $p<0.001$ ). Показатели SAAS были одинаковыми между группами 1 и 3, без существенных различий. Медиана баллов по шкале OHIP-14 была наименьшей в 3-й группе. Во всех группах образование было связано с баллами по SAAS и OHIP-14 ( $p=0.037$  и  $0.002$  соответственно). Показатели SAAS и OHIP-14 были значимо и положительно связаны ( $p<0.001$ ,  $r=0.501$ ).

**Заключение:** Был сделан вывод, что пациенты с потерей зубов имели более высокие показатели по шкале SAAS и OHIP-14. Кроме того, показатели SAAS были одинаковыми у пациентов с несъёмными протезами с опорой на имплантаты и у пациентов с естественными зубами. Взрослые среднего возраста с более высоким уровнем образования, как правило, демонстрируют лучшее качество жизни, связанное со здоровьем полости рта, и более низкую социальную тревожность.

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## Ключевые слова

имплантационная терапия, взрослые среднего возраста, профиль воздействия на здоровье полости рта-14, качество жизни, связанное со здоровьем полости рта, тревожность в отношении внешнего вида

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