

ASSESSMENT OF DEPRESSION, STRESS, ANXIETY AND ORAL HEALTH-RELATED QUALITY OF LIFE IN INDIVIDUALS WITH SJÖGREN'S SYNDROME: CASE CONTROL PILOT STUDY

Evaluación de la depresión, el estrés, la ansiedad y la calidad de vida relacionada con la salud bucal en personas con síndrome de Sjögren: estudio piloto de casos y controles

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ABSTRACT

Objective: Sjögren's syndrome (SS) is a chronic auto-immune inflammatory systemic disease, in which the infiltration of mononuclear cells in the exocrine glands leads to physiological and morphological changes. This pilot case-control study aims to describe the profile, evaluate the oral condition, quality of life (QoL) and psychological condition, through complete clinical examination, OHIP-14 and DASS-21 questionnaires.

Materials and Methods: The study was conducted with seven individuals with a final diagnosis of SS (case group [CG]), and seven individuals with symptoms of dry mouth (control group [GCO]), consulting at the institution from January to November 2021. Participants were selected by free demand and those previously seen at the institution with a diagnosis of SS between 19 and 70 years of age. The questionnaire OHIP-14 was applied to assess the patient's quality of life, where seven dimensions are assessed, subdivided into 14 questions through the Likert scale (0 to 4) assigned by the individual and which quantifies the impact of oral health on QoL. The questionnaire DASS-21 assessed the psychological condition of the patient, which presents seven questions for each emotional state (depression, anxiety, and stress), totaling 21 questions. The general clinical condition, evolution of SS, oral clinical condition, and the profile of this population were related to QoL factors and psychological conditions, using these assessment instruments.

Results: There was no statistically significant difference between the groups regarding stimulated salivary flow. The only symptom with a statistically significant difference in the CG was difficulty in phonation ($p < 0.001$). The dimensions related to functional limitation and physical pain showed the most expressive results ($p = 0.004$) ($p = 0.025$), showing a strong negative impact on the QoL of the CG individuals, and the dimension related to disability was the least affected ($p = 0.684$). The analysis of depression, anxiety, and stress did not show statistically significant results between the groups; however, in the CG, 5 (71.42%) individuals showed a severe degree of depression, anxiety, and stress.

Conclusions: Individuals in the case group showed some changes, with a strong negative impact on QoL compared to the control group.

Keywords: Sjogren's syndrome; Quality of life; Depression; Anxiety; Stress, psychological; Case-control studies.

RESUMEN

Objetivo: El síndrome de Sjögren (SS) es una enfermedad inflamatoria sistémica crónica autoinmune, en la que la infiltración de células mononucleares en las glándulas exocrinas provoca cambios fisiológicos y morfológicos. Este estudio piloto de casos y controles tiene como objetivo describir el perfil, evaluar la condición bucal, calidad de vida (CdV) y condición psicológica, mediante examen clínico completo, cuestionarios OHIP-14 y DASS-21.

Materiales y Métodos: El estudio se realizó con 7 individuos con diagnóstico final de SS, grupo de casos (CG) y 7 individuos con síntomas de sequedad bucal, grupo control (GCO) atendidos en la institución de enero a noviembre de 2021. Los participantes fueron seleccionados por libre demanda y entre los atendidos previamente en la institución con diagnóstico de SS entre 19 y 70 años de edad. Para evaluar la calidad de vida del paciente se aplicó el cuestionario OHIP-14, donde se evalúan siete dimensiones, sub-divididas en 14 preguntas a través de la escala de Likert (0 a 4) asignada por el individuo y que cuantifica el impacto de la salud bucal en la calidad de vida. El cuestionario DASS-21 evaluó la condición psicológica del paciente, el cual presenta siete preguntas para cada estado emocional (depresión, ansiedad y estrés), totalizando 21 preguntas. El estado clínico general, la evolución del SS, el estado clínico bucal y el perfil de esta población se relacionaron con factores de calidad de vida y condiciones psicológicas, mediante estos instrumentos de evaluación.

Resultados: En cuanto al flujo salival estimulado, no hubo diferencias estadísticamente significativas entre los grupos. El único síntoma que mostró diferencia estadísticamente significativa en el CG fue la dificultad en la fonación ($p < 0.001$). Las dimensiones relacionadas con limitación funcional y dolor físico mostraron los resultados más expresivos ($p = 0.004$) ($p = 0.025$), mostrando un fuerte impacto negativo en la CdV de los individuos del GC, y la dimensión relacionada con discapacidad fue la menos afectada ($p = 0.684$). El análisis de depresión, ansiedad y estrés no mostró resultados estadísticamente significativos entre los grupos; sin embargo, en el GC, 5 (71,42%) individuos presentaron un grado severo de depresión, ansiedad y estrés.

Conclusión: Se puede concluir que los individuos del grupo de casos mostraron algunos cambios, con un fuerte impacto negativo en la calidad de vida en comparación con el grupo de control.

Palabras Clave: Síndrome de Sjogren; Calidad de vida; Depresión; Ansiedad; Estrés psicológico; Estudios de casos y controles

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INTRODUCTION

Sjögren's Syndrome (SS) is a chronic inflammatory autoimmune systemic disease,¹ being the most frequent among immune diseases.¹⁻⁴ It affects 0.2% to 3.0% of the world population, with a ratio of 9:1 between women and men, between 40 and 60 years of age for females.⁵⁻¹⁰ It is characterized microscopically, by the infiltration of mononuclear cells in exocrine glands, representing the destruction of the cells that compose it,^{1,4,7-15} as well as, decreased secretory function.¹ The primary disease occurs when there is participation of the lacrimal and salivary glands with the absence of another associated autoimmune disease,^{1-3,6,10-15} while the secondary disease is associated with other autoimmune diseases such as rheumatoid arthritis, systemic lupus erythematosus and progressive systemic sclerosis.¹⁻¹⁴

Due to physiological and morphological alterations, or even the destruction and absence of glandular structures, individuals with SS may present signs and symptoms in the oral cavity such as hyposalivation, xerostomia and consequently, the presence of atypical dental caries, dental erosion, periodontal diseases, root lesions and/or susceptibility to oral lesions and infections.¹⁻¹⁵

They may also present fissured mucous membranes and tongue with erythematous areas, usually associated with the growth of *Candida albicans*.^{3,12-15} The diagnosis of oral manifestations resulting from SS is complex and multidisciplinary,¹ in which, according to scientific literature criteria, methods and tests for the establishment of the diagnosis of SS, when together, facilitate and guide the final

diagnosis of the disease, dependent on the verification of two basic pillars: evidence of glandular deficit and destruction.¹⁰ No method is accepted in isolation due to the occurrence of errors, limitations, and lack of reliability, however, there is no consensus on the best way to identify the syndrome, making comparisons between cases and clinical studies difficult.^{1-4,8,11,14}

The treatment for SS is symptomatic, being a clinical challenge due to the diversity of resources used, in which the stimulation of saliva production with the use of salivary stimulators may be a complementary alternative to relieve oral discomfort¹⁶ and keep the oral cavity moist by providing the protective effects of saliva^{1,3} to avoid complications related to reduced or absent salivary flow and provide a better quality of life.¹⁶

Prior to the onset of the disease, SS patients typically go through periods of extreme stress. As a result, the psychological aspects of the disease can cause mental disorders like anxiety and depression,^{17,18} which may have an impact on how the disease develops since depression in SS patients is linked to worsening of health condition.¹⁸

The Oral Health Impact Profile (OHIP-14) questionnaire has been widely used, allowing the individual's self-assessment of the impact of oral health on quality of life (QoL)¹⁹⁻²⁰. Another valid instrument to assess the psychological condition is the Depression, Anxiety and Stress scale-21 (DASS-21), based on a tripartite model, proposing that the affect disorder and its subtypes is a continuum between depression, anxiety, and

stress. The questionnaires can be used not only as a screening tool, but also at other visits to the individual to record progress and assess clinical improvement or the need for further interventions.^{17-18,2} Due to the scarcity of studies that correlate SS with the conditions for the physical, social, and psychological well-being of these individuals, more studies are needed that can relate the etiopathogenesis, evolution of SS, clinical condition, and profile of this population to QoL factors and psychological conditions.

However, this case pilot case-control study aims to analyze the profile of depression, stress, and anxiety, and to evaluate the oral condition and the impact of oral health on QoL through a complete clinical examination, OHIP-14 and DASS-21 questionnaires, in individuals diagnosed with SS, in order to relate it to the evolution of the disease.

MATERIALS AND METHODS

The study followed the principles of the Declaration of Helsinki, ethical standards for human experimentation, and biosafety protocols and was approved by the Human Research Ethics Committee (CAAE 370239 20.4.0000.5417). After the participants were informed about the study and gave their consent, an informed consent form according to the ages of the participants were duly signed.

Sample

A pilot case-control study conducted with individuals with a final diagnosis of SS, case group (CG) and individuals with dry mouth

symptoms, control group (COG) seen from January to November 2021. Individuals were selected by free demand and those previously seen at the institution with a diagnosis of SS between 19 and 70 years of age.

Data Collection

Anamnesis, extra and intra-oral physical examination, and salivary flow test were performed following Tárzia's methodology,²² classifying the individuals in normal flow, low flow, or hyposalivation, helping in the medication prescription. The volume of flow produced was measured for five minutes, and after this time the total saliva was divided by five, resulting in saliva volume in milliliter/minute (ml/min).²² The test was performed in two moments:

1. Analysis of stimulated salivary flow, with the aid of hyperboloid; and
2. Analysis of non-stimulated salivary flow, measured without stimulating its production.¹⁹ The results were interpreted according to Flink²³ into normal flow - resting salivation (ml/min): ≥ 0.2 and stimulated salivation (ml/min): ≥ 1.0 ; low flow - resting salivation (ml/min): 0.1-0.19 and stimulated salivation (ml/min): 0.7-0.99; and hyposalivation - resting salivation (ml/min): < 0.1 and stimulated salivation (ml/min): < 0.7 .

The demographic data collected during the anamnesis included: age, sex, race, occupation, habits, comorbidities, medications in use, duration of symptoms before the first consultation, whether there had been previous treatment with salivary substitutes, signs, and symptoms during consultations, whether there had been a biopsy of the labial minor

salivary gland and histopathology, treatment performed and follow-up.

When necessary, complementary exams were requested, among them: scintigraphy, rheumatoid factor, antinuclear factor, erythrocyte sedimentation rate, hemogram and ophthalmologic exams.

Assessment instruments

To assess the impact of oral health on QoL, the OHIP-14 questionnaire was used in its translated version in Portuguese.¹⁸

Seven dimensions were evaluated, classified as: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and disability. The dimensions were subdivided into 14 questions using the Lickert scale (0 to 4) assigned by the individual, which quantifies the impact of oral health on QoL;

The value of the answers was multiplied by the power corresponding to each question, thus allowing the calculation of each dimension and the total value. Each dimension was calculated, and its impact was classified as low (0-1.33), medium (1.33-2.68) and high (>2.68) and for the total value it was classified as weak (<9.33), medium (9.33-18.66) and strong (>18.66) impact, where the higher the value, the greater the negative impact of oral health on QoL of the individual.

The scale used to evaluate the psychological condition was the DASS-21, which presents seven questions for each emotional state, totaling a number of 21 questions.²¹ Its application is individual and lasts approximately 5 minutes. Before starting, the research participant was oriented about the questions being related to the previous week and, afterwards, he/she was given a response

card containing four answer options (0 - did not apply at all;

1. Applied to some degree or for a little time;
2. Applied to a considerable degree or for a good part of the time;
3. Applied a lot or most of the time) used as an answer to the 21 questions.

Subsequently, for each emotional state, the values were summed and counted to classify the score (normal, mild, moderate, severe, severe) for each item.

Data Analysis

A database covering the patients' responses was organized in Microsoft Office Excel 2016 (Microsoft Corporation, Redmond, WA, USA) spreadsheets for statistical data tabulation. These were statistically evaluated for normality for the selection of T-test, Mann-Whitney test, and Chi-square, with a significance level of 5% ($p < 0.05$). The null hypothesis that quality of life and psychological condition of SS individuals do not influence oral condition was tested.

RESULTS

Data from 14 patients were analyzed, seven with a final diagnosis of SS (case) and seven with symptoms of dry mouth but no diagnosis of SS (control). Table 1 and Table 2 show the demographic data and characteristics of the pathology report results of the individuals in the case and control groups.

Regarding stimulated salivary flow, there was no statistically significant difference between the groups ($p = 0.081$), in the non-stimulated salivary flow, the mean between the CG and COG was 0.03 and 0.2 respectively, with a statistically significant difference ($p = 0.006$)

Table 1: Demographic data of the case group (CG) and control group (GCO).

		Individuals with SS (CG) - n (%)	Individuals without SS (GCO) - n (%)	
Age	Between 18 and 30 years old	0 (0.0)	0 (0.0)	
	Between 31 and 45 years old	2 (28.57)	3 (42.85)	
	Between 46 and 60 years old	4 (57.14)	3 (42.85)	
	Over 60 years old	1 (14.28)	1 (14.28)	
Sex	Female	7 (100)	6 (85)	
	Male	0 (0.0)	1 (14.28)	
Race	White	7 (100)	7 (100)	
Occupation	Psychologist	1 (14.28)	0 (0.0)	
	Housekeeper	2 (28.57)	2 (28.57)	
	Elderly caregiver	1 (14.28)	0 (0.0)	
	Manager	1 (14.28)	1 (14.28)	
	Civil servant	1 (14.28)	0 (0.0)	
	Pharmacist	1 (14.28)	0 (0.0)	
	Laboratory Specialist	0 (0.0)	1 (14.28)	
	Social Worker	0 (0.0)	1 (14.28)	
	Landscaper	0 (0.0)	1 (14.28)	
	Baker	0 (0.0)	1 (14.28)	
	Habits	Tightening	5 (71.42)	2 (28.57)
		Smoking	1 (14.28)	1 (14.28)
		Onicofagy	1 (14.28)	0 (0.0)
Comorbidities	Autoimmune ^a	7 (100)	5 (71.42)	
	Psychiatric ^b	3 (42.85)	3 (42.85)	
	Diabetes	1 (14.28)	2 (28.57)	
	Hypothyroidism	2 (28.57)	0 (0.0)	
	Oral Lichen Planus	1 (14.28)	0 (0.0)	
	Fibromyalgia	3 (42.85)	1 (14.28)	
	Cardiovascular ^c	5 (71.42)	2 (28.57)	
	Gastric ^d	7 (100)	0 (0.0)	
	Cadasil	1 (14.28)	0 (0.0)	
	Medications	Cardiovascular	3 (42.85)	2 (28.57)
Antidiabetics		1 (14.28)	2 (28.57)	
Anticonvulsants		3 (42.85)	0 (0.0)	
Antithyroid drugs		3 (42.85)	2 (28.57)	
Rheumatological		5 (71.42)	0 (0.0)	
Psychopharmaceuticals (anxiolytics and antidepressants)		4 (57.14)	3 (42.85)	
Glucocorticoids		3 (42.85)	0 (0.0)	
Eye drops		3 (42.85)	1 (14.28)	
Gastrointestinal		2 (28.57)	1 (14.28)	
Hormone Replacement		1 (14.28)	0 (0.0)	
Duration of symptoms before consultation		1 to 11 months	0 (0.0)	4 (57.4)
	1 year to 10 years	3 (42.85)	3 (42.85)	
	10 years to 20 years	4 (57.14)	0 (0.0)	
Previous treatment	Moisturizers	2 (28.57)	0 (0.0)	
	Salivary stimulants	0 (0.0)	0 (0.0)	
	Salivary substitutes	2 (28.57)	1 (14.28)	
	No	3 (42.85)	0 (0.0)	
Signs	Tumefaction of the face	4 (57,14)	1 (14.28)	
	Dry lips and mucous membranes	7 (100)	7 (100)	
	Dry mouth	7 (100)	6 (85.71)	
	Viscous saliva	5 (71.42)	5 (71.42)	
	Fissured tongue	5 (71.42)	4 (57.14)	
	Dry skin	1 (14.28)	0 (0.0)	

		Individuals with SS (CG) - n (%)	Individuals without SS (GCO) - n (%)
Symptoms	Xerostomia	7 (100)	7 (100)
	Painful symptomatology in the salivary glands	5 (71.42)	1 (14.28)
	Difficulty in phonation	7 (100)	2 (28.57)
	Difficulty swallowing	6 (85.71)	4 (57.14)
	Mouthburn	4 (57.14)	0 (0.0)
	Biopsy of the labial gland minor salivary	Normal	0 (0.0)
Changed		6 (85.71)	0 (0.0)
Not performed		1 (14.28)	3 (42.85)
Treatment	Moisturizers	1 (14.28)	3 (42.85)
	Salivary stimulant	2 (28.57)	3 (42.85)
	Salivary substitute	4 (57.14)	1 (14.28)

SS: Sjogren's Syndrome. **CG:** Case group. **GCO:** Control group.

a: Sjogren's Syndrome, Systemic Lupus Erythematosus, Rheumatoid Arthritis, Hashimoto's Thyroiditis, Psoriasis.

b: Depression, Bipolar disorder, Generalized anxiety disorder.

c: Hypertension, Arrhythmia, Mitral valve reflux.

d: Esophagitis, Gastritis, Gastric reflux, Hiatal hernia.

Table 2: Results of the pathology report of the individuals from the case group (CG) and control group (GCO).

Case	Case Group (CG)	Control Group (GCO)
1	The connective tissue sections showing salivary gland and mucosa with acinar dystrophy, a mild to moderate focus of mononuclear inflammatory infiltrate. The foci of lymphocytic cells are found in greater numbers than normal	
2		Microscopy reveals oral mucosa and minor salivary gland mucosa with morphological appearance of complete normality, without leukocyte infiltration of any nature.
3		Microscopic sections reveal oral mucosa and, underlying, fibrous connective tissue showing numerous glandular lobules with normal patterns, with mononuclear cells compatible with lymphocyte clusters (normally found in mucosa, skin, and salivary gland)
4		The sections reveal oral mucosa consisting of parakeratinized stratified sidewalk epithelium. Underlying, there is fibrous connective tissue with normal pattern mucous glands, showing rare mononuclear cells, glandular ducts, and numerous mucous acini
5		The sections reveal seromucous glands with a normal pattern, without infiltration by mononuclear cells. The oral mucosa consists of hyperplastic stratified sidewalk epithelium with foci of spongiosis. Underlying, there is fibrous connective tissue with rare seromucous acini and ducts with normal patterns

Table 3: Impact of oral health on the quality of life of individuals with *Sjogren's Syndrome* through Oral Health Impact Profile questionnaire

Dimension	Individuals with SS (CG)	Impact ^a	Individuals without SS (GCO)	Impact ^a	p-value
Functional limitation	2.081	Medium	0.857	Low	0.004
Physical pain	2.081	High	1.234	Low	0.025
Psychological discomfort	2.543	Medium	2.036	Medium	0.455
Physical disability	2.394	Medium	1.249	Low	0.087
Psychological disability	2.543	Medium	1.714	Medium	0.311
Social disability	1.606	Medium	1.463	Medium	0.832
Disability	1.876	Medium	1.616	Medium	0.684
OHIP-14 ^b	15.896	Medium	10.074	Medium	0.07

SS: Sjogren's Syndrome. **CG:** Case group. **GCO:** Control group. **OHIP-14:** Oral Health Impact Profile.

a: Impact of each dimension: low (0-1.33), medium (1.33-2.68) and high (>2.68)

b: General impact: weak (<9.33), medium (9.33-18.66) and strong (>18.66)

Table 4: General average of the assessment of the psychological condition of individuals with *Sjogren's Syndrome* through Depression, Anxiety and Stress scale-21.

Dimension	Individuals with SS (CG)	Individuals without SS (GCO)	p-value
Depression	31.000	16.000	0.070
Anxiety	31.000	16.000	0.070
Stress	31.000	16.000	0.070

SS: Sjogren's Syndrome. **CG:** Case group. **GCO:** Control group.

in both groups. The signs and symptoms were analyzed according to presence or absence, and difficulty in phonation was the only symptom that showed a statistically significant difference in the CG ($p < 0.001$); the others showed no differences.

The dimension related to functional limitation that assesses the impact on the pronunciation of words and speech difficulty and the dimension related to physical pain that assesses mouth pain and discomfort when eating had the most expressive results ($p = 0.004$) ($p = 0.025$), respectively, showing a strong negative impact on the QL of the CG

individuals, and the dimension related to disability that assesses life in general and the ability to work was the least affected ($p = 0.684$).

The other dimensions presented a non-significant p -value. The analysis of depression, anxiety, and stress did not show statistically significant results among the groups, however, in the CG five individuals (71.42%) showed a severe degree of depression, anxiety, and stress, while two (28.57%) showed a severe degree for all variables.

In the COG, one individual (14.28%) had normal depression, anxiety, and stress; two (28.57%) were rated severe for all variables,

while two (28.57%) were found severe for depression and anxiety and severe for stress, one (14.28%) was rated mild for depression and anxiety and normal for stress, and finally, one (14.28%) had moderate depression, severe anxiety, and mild stress (Table 3 and Table 4).

DISCUSSION

In the present case control pilot study, there was a prevalence of female, white race, and age between 46 and 60 years. This is so because the hormonal etiology of SS,^{8,11,24} has a direct correlation with the association between advanced age and the majority of females. Reduced levels of estrogen and progesterone may account for the preponderance of SS in women and its progression after menopause, as well as the low amounts of dehydroepiandrosterone seen in salivary gland tissues.^{4,8,11,24}

Cardiovascular, mental, and gastric comorbidities were the most common in SS patients; similar findings were found in other studies.^{8,25,26} In addition to saliva being crucial for neutralizing the acid, patients with SS also exhibit varying degrees of esophageal dysmotility, which manifests as gastroesophageal and laryngopharyngeal reflux. If saliva is absent, the reflux symptoms may become more noticeable.²⁵

According to studies, primary SS sufferers experience significant psychological stress following bad experiences years before they manifest the first symptoms of the condition. Studies also report that patients with primary SS experience high psychological stress after negative events, years before they develop the first signs and symptoms of the

disease, without possible coping strategies to confront these changes,^{8,26} in addition to experiencing increased heart rate at rest and having greater fatigue.²⁷

During the clinical examination, individuals reported the duration of symptoms before the consultations and the final diagnosis of SS, with a prevalence of 1 to 10 years in GC and 10 to 20 years in, which corroborates studies showing that the diagnosis of the disease, on average, is established between 6 and 10 years due to the specific nature of the clinical manifestations of the syndrome.¹

The prevalent clinical signs were dry lips and mucous membranes, dry mouth, viscous saliva and fissured tongue, because the excessive infiltration of autoantibodies in the exocrine glands leads to morphological and functional destruction of the salivary glands, which causes dryness of the mucous membranes, besides the tongue losing the taste buds and developing deep fissures.^{2,8,11,14}

Regarding the symptoms frequently reported by the individuals, xerostomia was the most prevalent in GC and GCO followed by difficulty swallowing and phonation, besides pain symptomatology. These consequences are due to the absence of saliva in the oral cavity,^{2,8,11,14,19,26} in agreement with our results regarding the difficulty in phonation between the case-control groups.

Few individuals reported the use of moisturizers or salivary substitutes as prior treatment before the initial consultation, however, after the consultation, all individuals received treatment based on the stimulation or replacement of glandular secretion.^{2,28,29} The use of salivary substitute was made due to the

protective properties of saliva, such as the repair of soft tissues by having growth factors that aid in wound healing and buffering activity, where saliva has the capacity to reduce the acid pH and maintain it at adequate levels, reducing the risk of developing dental caries.¹⁻⁴

Are preferable in situations where patients don't respond well to stimulation of residual secretion or have a complete loss of secretion. This is because, in addition to proteins, defensins, cytokines, immunoglobulin A (IgA), and hormones are also present and play a role in immunity and innate defense.²

The sialometry test was performed in all individuals and there was no statistically significant difference for the stimulated salivary flow between the case-control groups, on the other hand, there was a significant deficit in the CG in relation to the non-stimulated salivary flow, which corroborates other studies that point out that changes in the salivary flow rate are directly associated with the damage of the disease, due to the infiltration of autoantibodies in the salivary glands leading to functional changes, presenting negative results.^{30,31}

Regarding the impact of oral health on the QoL of individuals, there was a strong negative impact on the dimension related to the pronunciation of words and dysgeusia as well as, in relation to mouth pain and discomfort during eating, which can be corroborated based on other studies, regarding the effect of oral health on people's quality of life.^{2,30-34} This is because the patients' abnormal chemosensory perception results in altered taste perception and decreased salivary flow,

which prevents substances from reaching the taste buds and also causes difficulty chewing and swallowing food. These problems have a direct impact on people's quality of life because saliva is necessary for softening food, forming the bolus, assisting in chewing, and swallowing, and facilitating speech.^{2,25,27,30-32}

In clinical practice, patients with SS frequently go through periods of extreme stress before the onset of the disease,¹⁷ and psychological factors have a negative impact on QoL because they might result in mental disorders such as anxiety and depression that could affect the course of the disease.¹⁷ Depression in patients with SS is associated with worsening health status,¹⁸ thus, the recognition of depression, anxiety, and stress can be a target for interventions aimed at improving the QoL of individuals, with positive effects on the improvement of clinical symptoms and physical health in general.¹⁸ Although both groups in our study used the Depression, Anxiety, and Stress Scale (DASS-21) as a psychological assessment tool, there was no statistically significant difference between the groups, according to the analysis.

The limitations of the study include the small sample size due to the difficulty in allocating the individuals, as well as in contacting them, and the evaluation time, since there was a pause between the first and last individuals analyzed due to the pandemic period, and even afterwards, many did not return to the consultations because they did not feel safe in public environments, even for a major reason, which may have influenced the data

analyzed and the statistical results obtained. In addition, no statistical methods were performed to assess selection bias. Another limitation was that we did not use a study group with a different oral condition. This is because the effect of a pathology on quality of life may be tendentious, and there is no way to know this for sure as there was no statistical control of the confusion-causing factors.

This case-control study pointed out a greater need for future studies with the same profile of patients presenting SS, since there is little literature and no study has evaluated the two questionnaires used in this research, such as those mentioned in this study, DASS-21 and OHIP-14, which correlate the disease with depression, anxiety and stress profiles, and the evaluation of the oral condition on the impact of oral health on QL, or even the use of other questionnaires preestablished by the authors that verify the association of the disease with the conditions mentioned in this study. In addition, it suggests that the authors consider a larger number of individuals in the sample and a longer time in the evaluation.

CONCLUSION

In conclusion, it can be confirmed that the CG subjects presented alterations in relation to functional limitation and physical pain after the application of the OHIP-14 questionnaire, showing a strong negative impact on QL in comparison to the OCG subjects. The DASS-21 and OHIP-14 questionnaires were useful and necessary tools for the follow-up of this patient profile during the studied period.

The study also highlighted the need for additional research with patients who have SS, given the paucity of literature, particularly in studies that link the two questionnaires used in this study, to correlate the functional and physical limitations of the illness and the degree to which these can affect people's quality of life and psychological well-being.

CONFLICT OF INTERESTS

All authors declare no conflicts of interest. The funder of the study had no role in study design, collection, analysis, interpretation of data, writing of the manuscript, or decision to submit the manuscript.

ETHICS APPROVAL

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national Human Research Ethics Committee (CA AE (37023920.4.0000.5417) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Each participant in the study provided written consent using age-specific consent forms.

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