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Exploring the Association of Alexithymia and Romantic Attachment with Quality of Life and Pain Perception in Systemic Sclerosis

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Abstract

Introduction: Systemic Sclerosis (SSc) is a rare autoimmune connective tissue disease affecting the skin and internal organs, significantly impacting quality of life (QoL). Alexithymia and insecure romantic attachment may hinder coping and influence pain perception in chronic illness. This study aims to explore the associations among alexithymia, romantic attachment, pain perception, quality of life, and age in women with SSc, and to examine the predictive role of alexithymia, attachment dimensions and age on perceived physical quality of life using multiple linear regression analyses.

Methods: Fifty women with SSc were recruited from a hospital in Rome. Participants completed a socio-demographic questionnaire, the 20-item Toronto Alexithymia Scale (TAS-20), the Experiences in Close Relationships–Revised (ECR-R), the Pain Visual Analogue Scale (pVAS), and the WHO Quality of Life Questionnaire–Brief Version (WHOQOL-BREF).

Results: Participants had a mean age of 52.98 years ($M = 52.98$; $SD = 12.87$) and a mean SSc duration of 10.31 years ($M = 10.31$; $SD = 8.84$). TAS-20 scores negatively correlated with all QoL domains and total QoL ($r = -0.303$ to -0.672, all $p < .01$). Difficulty in Describing Feelings correlated positively with pain VAS ($r = .312$, $p < .05$). ECR-R Avoidance and Anxiety were negatively associated with several QoL dimensions. Difficulty in Describing Feelings emerged as a significant predictor of physical QoL dimension ($B = -0.56$, $\beta = -.68$, $p < .001$). Overall, 18% scored above the TAS-20 clinical cut-off. Overall, 18% scored above the TAS-20 clinical cut-off.

Conclusions: The findings suggest that higher levels of alexithymia and insecure attachment are associated with poorer quality of life and greater pain perception in women with Ssc. In particular, difficulties in describing feelings appear to play a key role in the physical dimension of quality of life, pointing to the clinical relevance of emotion verbalization processes in this population. These results support the relevance of affective regulation processes as potential targets for psychological assessment and intervention in Ssc patients and highlight the importance of multidisciplinary care.

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1. Introduction

Systemic Sclerosis (SSc), also known as scleroderma, is a complex autoimmune rheumatic connective tissue and vascular disease that affects the skin and multiple organ systems like joints, heart, lungs, kidneys and gastrointestinal tract (Al-Gburi et al., 2025; Müller et al., 2012) and culminating in fibrosis of skin and internal organs (Lepri et al., 2024; Seibold, 2005). SSc is associated with extensive morbidity, including disfiguring skin thickening, finger ulcers, joint contractures, pulmonary hypertension, interstitial lung disease, chronic diarrhea, and renal failure (Jimenez et al., 2025; Seibold, 2005; Wigley & Hummers, 2003). It shows a peak incidence in the 55–69-year age range, with a female predominance of approximately 7.8:1 in Italy (Ciaffi et al., 2021).

The progression of SSc varies significantly among individuals: some may experience a slow disease course with mild symptoms, while others face rapid progression, leading to severe organ damage (Lepri et al., 2024) and, in extreme cases, fatal outcomes within months of diagnosis (Newton et al., 2012). Management of SSc focuses on symptom control rather than a cure, utilizing both non-pharmacological approaches and pharmacological treatments (Denton et al., 2024; Müller et al., 2012). Patients with SSc commonly suffer from multiple pain-related symptoms, including joint pain, musculoskeletal discomfort, breathing difficulties, digestive issues, and digital ulcers (Denton et al., 2006; Lepri et al., 2024). Additionally, changes in physical appearance, persistent pain, fatigue, and challenges in daily activities contribute to significant psychological distress (Jha et al., 2022; Mura et al., 2012). These factors have been shown to significantly impact SSc patients' quality of life (Bonomi et al., 2025; Frantz et al., 2016; Hudson et al., 2009), potentially leading to greater impairment than that observed in other rheumatic diseases (Park et al., 2019) and may contribute to the development of psychological distress. Different studies have detected a high prevalence of depressive symptoms in patients with SSc highlighting the impact of the disease on the psychological and mental function of these patients (Bragazzi et al., 2019; March et al., 2019; Panopoulos et al., 2018; Romanazzo et al., 2024; Thombs et al., 2007). Anxiety and obsessive-compulsive symptoms have also been identified as significant in this population (Del Rosso et al., 2013; Faezi et al., 2017; Jha et al., 2022; Marcoccia et al., 2024). In this direction, Marcoccia and colleagues (2024) observed in SSc patients' clinical levels of depression, obsessive-compulsive symptoms as well as somatization, sustaining how emotional distress is expressed in various forms in this population.

In facing a complex disease as SSc, to possess emotional regulation skills may play a relevant role as protective factor for both mental and physical outcomes. In this light, alexithymia, also defined as an affective regulation disorder (Taylor et al., 1997), is a complex construct involving difficulties in identifying and expressing emotions, a reduced capacity for imagination, and a preference for a concrete and externally oriented cognitive style (Renzi et al., 2020; Taylor & Bagby, 2013). A broad international literature highlights that high alexithymia levels are associated with various mental and physical diseases (Benfante & Romeo, 2023; Di Giuseppe & Conversano, 2022; Hemming et al., 2019; Kojima, 2012; Quinto et al., 2022; Taylor et al., 1997).

Indeed, people with high levels of alexithymia tend to use an avoidant profile of regulation strategies, characterized by high expressive-suppression and low cognitive-reappraisal (Swart et al., 2009). All of this may play a role both as regards the onset of medical condition as well as the disease progression and management in terms of pain perception, severity of the symptomatology etc. (Connelly et al., 2007; Di Tella et al., 2017).

Consistently, high prevalence of alexithymia has been reported in a wide range of chronic conditions compared with health groups, including diabetes mellitus (Pei et al., 2022), fibromyalgia and chronic pain syndromes in both adult and pediatric populations (Aaron et al., 2019; Bruton et al., 2025; Habibi Asgarabad et al., 2023), dermatological chronic conditions such as psoriasis, atopic dermatitis, and hidradenitis suppurativa (Holmes et al., 2022), irritable bowel syndrome and other functional gastrointestinal disorders (Ismaiel et al., 2024) and in asthma and respiratory diseases (Ricciardi et al., 2023; Silvestro et al., 2023). In severe asthma, alexithymia has been linked to impaired symptom perception, poorer disease control, and reduced treatment adherence (Ricciardi et al., 2023; Silvestro et al., 2023). In an interesting study with community samples, alexithymia has been associated with an increased estimated cardiovascular risk (Vadini et al., 2024).

Emerging evidence suggests that alexithymia may also play a predictive role in individuals with chronic conditions, contributing to poorer psychological adjustment, higher symptom burden, reduced treatment response, and adverse health outcomes over time. This predictive role has been most consistently documented in chronic muscoskeletal pain populations (Lanzara et al., 2024), diabetes-related self-management and glycaemic control (Merlo et al., 2025), symptom progression among patients receiving maintenance haemodialysis (Liu et al., 2025), and long-term outcomes at the population level, including early mortality (Carta et al., 2022).

Moreover, the association between higher alexithymia and lower quality of life has been widely studied in clinical populations (Castelli et al., 2012; Iglesias Rey et al., 2014; Nekouei et al., 2014; Tesio et al., 2018) and in the general population (Mattila et al., 2009). To the best of our knowledge, only two studies have investigated the presence of alexithymia in the SSc patients, reporting prevalence rates of patients with alexithymia above the clinical cut-off of 22% and 42%, respectively (Basta et al., 2019; Dattolo et al., 2021). Additionally, in the Basta and colleagues' study (2019) patients with higher alexithymia levels also exhibited higher levels of anxiety, depression, pain, disability in daily activities, as well as lower levels of quality of life.

Another relevant construct that may be central in dealing with the experience of SSc is attachment, as it may, like alexithymia, affect people's ability to seek care and support when facing difficult situations. Originally introduced by Bowlby (1969), the concept of attachment defines the relationship patterns that develop between children and their caregivers, which later shape their expectations and interactions with significant others in adulthood. Modern research often assesses attachment through the dimensions of anxiety and avoidance (Brennan et al., 1998; Ravitz et al., 2010). Individuals with high attachment anxiety tend to rely heavily on close relationships and fear rejection, whereas those with high attachment avoidance prefer self-sufficiency and feel uneasy with intimacy (Brennan et al., 1998). In contrast, securely attached individuals score low on both dimensions and seek support from close relationships during stressful situations. From this perspective, individuals with secure attachment are more likely to acknowledge psychological distress and take proactive steps to manage it. In contrast, those with avoidant attachment may suppress or downplay their emotional distress (Kobak & Sceery, 1988). Indeed, people with insecure attachment styles tend to perceive and seek less social support while tend to experience greater psychological distress (Gökdağ, 2021; Mallinckrodt & Wei, 2005).

The close relationship between insecure attachment styles and psychological stress or psychopathology such as anxiety and depression has long been known (Mikulincer & Shaver, 2012; Spruit et al., 2020).

More recently, research has increasingly highlighted the relationship between attachment styles and physical health. In particular, the attachment system is closely linked to how individuals regulate their emotions under conditions of stress or threat (Pietromonaco & Powers, 2015). In this context, insecure attachment styles have been associated with poorer physical health outcomes, likely due to the interplay between maladaptive emotion regulation strategies, relational behaviors, and physiological mechanisms such as cortisol regulation, cardiovascular reactivity, and immune responses, as well as health-related behaviors (Pietromonaco & Beck, 2019).

Consistent with this framework, a high prevalence of attachment insecurity has been documented in several clinical populations, including patients with hypertension (Balint et al., 2016), individuals with fibromyalgia (Peñacoba et al., 2018), children with chronic illnesses (Coutinho et al., 2020), children with dermatological conditions (Soon et al., 2024), and individuals experiencing chronic pain (Meredith et al., 2008). Moreover, emerging research has specifically emphasized the role of attachment styles in the development and maintenance of chronic pain conditions (Meredith & Strong, 2019; Stamp et al., 2025). In this light, Meredith & Strong (2019) reported that insecurely attached people may be at greater risk of developing and maintaining chronic pain: insecurely attached people tend to perceive pain as more threatening, struggle with coping and seeking support, are less able to form therapeutic relationships, and often distrust healthcare providers, all of which may increase their risk of chronic pain and lead to poorer treatment outcomes.

In line with this model, a recent study found that, in patients with SSc, an insecure avoidant attachment style was associated with greater perceived pain (Hicks & Kearney, 2019).

In patients with arthritis, anxious and avoidant attachment styles have been linked to heightened perceptions of disease-related threat, lower levels of perceived social support, and reduced coping efficacy (Sirois & Gick, 2016). In contrast, secure attachment is associated with more positive psychological adjustment in individuals with chronic illness, including better emotional regulation and more effective coping strategies (Darbani & Atapour, 2023). These observations may help explain why insecure attachment styles have been shown to influence quality of life in individuals with various medical conditions, such as fibromyalgia (Sechi et al., 2020), psoriasis (Demirci et al., 2020), cancer (Karveli et al., 2023), and cardiovascular disease (Heenan et al., 2020), among others.

In the context of SSc, studies on psychological dimensions are limited and primarily focused on psychopathological aspects. Moreover, there are no studies specifically investigating the relationship between alexithymia, attachment, quality of life and pain perception, highlighting the need for further research in this area due to its potential clinical implications. To overcome these limits in the international literature, our study aims to explore the association between alexithymia, adult attachment pattern, quality of life, pain perception and age in patients with SSc. Additionally, the study aims to examine the extent to which alexithymia features, adult attachment patterns, and age predict perceived physical quality of life. A further objective is to assess the prevalence of patients whose alexithymia scores exceed the established clinical cut-off.

In line with the literature, the hypotheses of the study are the following:

Hypothesis 1. Higher alexithymia levels as well as higher levels of anxious and avoidant attachment patterns will be associated with worse quality of life and greater pain perception in SSc patients.

Hypothesis 2. Higher levels of alexithymia, as well as higher anxious and avoidant attachment dimensions, will significantly predict a poorer perceived physical quality of life in Ssc patients.

Hypothesis 3. The prevalence of alexithymia in Ssc population will be higher than that reported in non-clinical population.

2. Materials and Methods

2.1 Participants and procedures

The present study adopted a cross-sectional observational design.

Participants were recruited from patients consecutively admitted to the Department of Vascular Medicine and Autoimmunity at Sandro Pertini Hospital in Rome, Italy. A physician screened the participants during their clinical visit to determine the eligibility of the women.

The inclusion criteria were as follows:

- Diagnosis of SSc according to ACR/EULAR criteria for at least one year
- Female sex
- Age between 18 and 80 years
- Adequate understanding of the Italian language

The exclusion criteria were:

- The presence of a previously diagnosed psychiatric disorder
- Severe neurocognitive impairment
- Insufficient knowledge of the Italian language

Eligible patients were referred to the study investigator, who provided detailed information regarding the objectives and nature of the study. All the participants received information and consent sheets describing the study, a copy of the questionnaires, and a pen. Participants provided informed consent for the research use of their medical data, following both local regulations and international legislation (Declaration of Helsinki).

This observational study received approval from the local Ethical Committee Lazio 2 (IRB protocol number: 0128753/2022).

Fifty-two women were invited to participate in the study; 50 accepted, while 2 declined, resulting in a participation rate of 96.2%. No participant was deemed ineligible due to psychiatric, cognitive concerns or language barriers.

Participants reported a mean age of 52.98 years (sd=12.87) and the mean time from the diagnosis was 10.31 years (sd=8.84). The mean score of the Medger scale for assessing the severity of the disease was 13.80 (sd=5.57).

Furthermore, of the 50 women participating in the study: the 64% was married; the 72% had an educational level ≤ 13 years, the 70% has at least one child, and 40% reported having experienced a miscarriage (see Table 1).

The sociodemographic characteristics of the sample are shown in Table 1.

Table 1

Participants' socio-anamnestic characteristics

Variables	M/ n.	SD/ %
Age	52.98	12.87
Time since diagnosis	10.31	8.84
Medsger Severity Scale	13.80	5.57
Marital status		
Married	32	64
In a Relationship	4	8
Single	9	18
Separated	4	8
Educational Qualification		
Elementary Schools	3	6
Middle School Diploma	10	20
High School Diploma	23	46
Bachelor's degree	14	28
Employment status		
Unemployed	4	16
Employed	15	60
Student	6	24
Educational Qualification		
Middle School Diploma	3	12
High School Diploma	15	60
Bachelor's degree	5	20
Postgraduate degree	2	8
Children		
Yes	35	70
No	15	30
Abortion		
Yes	20	40
No	30	60

2.2 Measures

2.2.1 Socio-demographic questionnaire

Socio-demographic questionnaire was specifically designed to collect information concerning age, social status, education level, occupational activity and information about psychological and psychiatric history. Information about the disease was also collected using the Medsger Severity Scale (Medsger et al., 1999) to assess the severity of the disease.

2.2.2 Toronto Alexithymia Scale-20 (TAS-20)

The 20-Item Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994, b; Italian version: Bressi et al., 1996) is a widely used self-assessment tool for evaluating alexithymia. It consists of three key dimensions: difficulty in identifying emotions (F1), difficulty in describing emotions (F2), and a tendency toward externally focused thinking (F3). Participants respond to each item using a 5-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The questionnaire generates both an overall score and separate scores for each factor. Total scores range from 20 to 100, with values of 61 or higher indicating pronounced alexithymia, while scores between 52 and 60 suggest a borderline condition.

The scale showed good internal consistency in the original validation study (Cronbach's α ≈ .81). The Italian adaptation of the TAS-20 (Bressi et al., 1996) also demonstrated adequate internal consistency (Cronbach's α = .75).

The TAS-20 has been widely used in diverse clinical populations. For example, systematic reviews have synthesised TAS-20 findings in eating disorder samples (Westwood et al., 2017), autism spectrum disorder (Kinnaird et al., 2019), and acquired brain injury populations (Fynn et al., 2021), demonstrating its applicability across a range of clinical conditions.

2.2.3 Experience in Close Relationships-Revised (ECR-R)

The Experience in Close Relationships-Revised (ECR-R; Brennan et al., 1998; Italian version: Busonera et al., 2014) is a self-report tool designed to evaluate attachment styles. Participants rate their agreement with statements about their feelings in close relationships using a 7-point Likert scale (1 = strongly disagree, 4 = neutral/mixed, 7 = strongly agree). This study employed the 36-item version of the measure. The Avoidance subscale examines reluctance toward intimacy and emotional closeness. Meanwhile, the Anxiety subscale assesses concerns about rejection and abandonment. Subscale scores are derived by averaging the respective items, with a possible range of 1 to 7. Research has supported the measure's construct validity (Fairchild & Finney, 2006). The ECR-R has demonstrated strong internal consistency in its original version, with Cronbach's alpha values of .90 for the anxiety subscale and .89 for the avoidance subscale. In the Italian adaptation (Busonera et al., 2014) anxiety and avoidance scales showed satisfactory internal consistencies, with Cronbach's alpha values of .88 and .79, respectively. It has been widely used in other clinical (Cuoco et al., 2021) and psychiatric (Baryshnikov et al., 2017) populations.

2.2.4 World Health Organization Quality of Life Questionnaire- Brief Version (WHOQOL-BREF)

The World Health Organization Quality of Life Questionnaire- Brief Version (WHOQOL-BREF; The WHOQOL Group, 1998; Italian version: De Girolamo et al., 2000) is a quality of life (QoL) assessment tool used in healthcare. It comprises 26 items, with 24 categorized into four QoL domains: physical health, psychological well-being, social relationships, and environment. Two additional items assess overall health and QoL but are not scored. Data collected from 23 countries (n = 11,801) demonstrated good internal consistency, reliability and construct validity for the international WHOQOL-BREF, with Cronbach's alpha values for each of the four domain scores ranged from 0.66 (for domain 3) to 0.84 (for domain 1). The Italian version of the WHOQOL-BREF (De Girolamo et al., 2000) showed adequate internal consistency for the Physical ($\alpha = .80$), Psychological ($\alpha = .75$), and Environmental ($\alpha = .73$) domains. The Social Relationships domain showed lower reliability ($\alpha = .65$), likely due to the limited number of items.

The WHOQOL-BREF has been widely used in clinical populations to assess quality of life, including patients with sickle cell disease (Almarabheh et al., 2023), individuals with chronic headache (Brzoska et al., 2020), and caregivers in the context of pediatric asthma (Roncada et al., 2015).

2.2.5 The Pain Visual Analogue Scale (pVAS)

The Pain Visual Analogue Scale (pVAS; McCormack et al., 1988) is a unidimensional measure of pain intensity and has been widely used in diverse adult populations. The pain VAS consists of a single continuous horizontal line anchored by descriptors at both extremes: "no pain at all" and "my pain is as bad as it could possibly be." For this study, we assessed pain over the past week.

Test–retest reliability has been shown to be good among patients attending a rheumatology outpatient clinic (Ferraz et l., 1990). Based on the majority of studies, the Pain Visual Analogue Scale is considered a valid and reliable tool for pain assessment (Begum & Hossain, 2022). The pVAS has been widely used in clinical populations to assess pain perception, including patients with low back pain (Shafshak & Elnemr, 2021) and patients with chronic kidney disease (Dos Santos et al., 2021).

2.3 Data Analysis

All statistical analyses were performed using the Statistical Package for Social Science version 25 (SPSS version 25) for Windows (IBM, Armonk, NY, USA). Data were reported as frequencies and percentages for discrete variables, and as means and standard deviations for continuous variables. The variables exhibited acceptable levels of normality. Assumption checks, conducted by examining skewness and kurtosis values, indicated no substantial deviations from a normal distribution. Accordingly, Pearson's correlation analysis was employed to measure the association between alexithymia levels, attachment styles, quality of life dimensions, pain and age. A p value < 0.05 was considered significant. A multiple linear regression model was performed to examine the predictive role of TAS-20 dimensions, anxious and avoidant attachment levels and age (independent variables) on the perceived physical quality of life (dependent variable). All independent variables were entered simultaneously. Statistical significance was considered when p < .05.

3. Results

The descriptive statistics for alexithymia, attachment dimensions, pain, age, and quality of life measures are reported in Table 2. Mean values and standard deviations are presented for all study variables, including alexithymia dimensions, attachment anxiety and avoidance, pain VAS and WHOQOL-BREF domains.

Table 2

Participant's psychological and quality of life measures investigated

Variables	M	SD
20-item Toronto Alexithymia Scale		
Total score	49.26	13.40
DDF Difficulty Describing Feelings	12.22	4.27
DIF Difficulty Identifying Feelings	17.75	6.86
EOT Externally-Oriented Thinking	19.18	5.09
Experiences in Close Relationship-R		
Anxiety	56.36	19.29
Avoidance	54.98	19.64
Pain Visual Analogue Scale	4.58	3.13
WHOQOL-BREF		
Overall Health	6.28	1.51
Physical Health	23.10	5.59
Psychological Health	18.76	4.10
Social Relationship	10.74	2.40
Environment	25.98	6.20

Note. WHOQOL, World Health Organization Quality of Life Questionnaire Brief Version.

To test Hypothesis 1, correlational analyses were conducted to examine the associations between alexithymia, attachment dimensions, pain perception, age, and quality of life (see Table 3).

Table 3

Associations between alexithymia, attachment, quality of life, pain, and age

	WHOQOL Physical	WHOQOL Psychological	WHOQOL Social	WHOQOL Environment	WHOQOL Overall	Pain VAS	Age
TAS-20 DIF	-0.228	-.378**	-.350*	-.364**	-0.190	0.007	-0.173
TAS-20 DDF	-.504**	-.726**	-.582**	-.615**	-.433**	.312*	-0.105
TAS-20 EOT	-0.052	-.466**	-0.273	-0.180	-0.077	0.134	0.123
TAS-20 Total	-.353*	-.672**	-.505**	-.499**	-.303*	0.222	-0.050
ECR Anxiety	-0.129	-.337*	-.296*	-0.271	-0.087	0.035	-.341*
ECR Avoidance	-0.277	-.492**	-.359*	-.336*	-0.273	0.181	-0.046
Age	-0.142	-0.082	0.113	-0.043	-0.184	0.290*	-

Note. *p<.05; **p<.01

TAS-20, Toronto Alexithymia Scale; TAS-20 DIF, Difficulties in Identifying Feelings; TAS-20 DDF, Difficulties in Describing Feelings; TAS-20 EOT, Externally Oriented Thinking; ECR, Experiences in Close Relationship; WHOQOL, World Health Organization Quality of Life Questionnaire Brief Version; pain VAS, Pain Visual Analogue Scale.

As shown in Table 3, correlational analysis reveals several associations among alexithymia scores, anxiety and avoidance attachment scores, pain, age and quality of life levels in women with SSc.

More specifically, the TAS-20 Total shows significant negative correlations with all the dimensions of WHOQOL. TAS-20 Difficulty in Describing Feelings (DDF) shows negative correlations with all the dimensions of WHOQOL and with the Pain VAS score. TAS-20 Difficulty in Identifying Feelings (DIF) shows significant negative correlation with Psychological, Social and Environmental dimensions of WHOQOL. TAS-20 Externally

Orientated Thinking (EOT) shows significant negative correlation with psychological WHOQOL dimension.

Both ECR Anxiety and Avoidance dimensions show significant negative association with Psychological and Social dimensions of WHOQOL, while just ECR Avoidance dimension shows significant negative association with Environmental dimension of WHOQOL. Age shows a significant positive correlation with pain perception.

To test Hypothesis 2, a multiple linear regression model was performed to examine the role of age, ECR Anxiety and Avoidance dimensions, and the three TAS-20 dimensions in predicting the perceived physical WHOQOL. The model explains the 28% of the variance in the dependent variable ($R^2 = .37$; adjusted $R^2 = .28$; $p < .01$,).

Table 4

Multiple linear regression predicting physical quality of life (WHOQOL-BREF physical domain)

Predictor	**B**	**SE B**	**β**	**t**	**p**
Constant	31,837	4,535		7,020	< .001**
ECR Avoidance	-0,027	0,046	-0,094	-0,583	0,563
ECR Anxiety	0,014	0,048	0,049	0,298	0,768
TAS-20 DIF	0,063	0,233	0,047	0,268	0,790
TAS-20 DDF	-0,558	0,143	-0,678	-3,900	< .001**
TAS-20 EOT	0,337	0,168	0,304	2,002	0,052
Age	-0,102	0,062	-0,228	-1,657	0,105

Note. Model "Enter" method in SPSS Statistics. TAS-20, Toronto Alexithymia Scale; TAS-20 DIF, Difficulties in Identifying Feelings; TAS-20 DDF, Difficulties in Describing Feelings; TAS-20 EOT, Externally Oriented Thinking; ECR, Experiences in Close Relationship.

B = unstandardized regression coefficients; SE = standard error of the coefficient; β = standardized Coefficient; t = t value; p = p value.

*p≤.05; **p≤.01

Among the predictors included in the model, TAS-20 Difficulty Describing Feelings emerged as the only significant predictor of physical quality of life, showing a strong negative association with the WHOQOL physical domain ($B = -0.56$, $\beta = -.68$, $p < .001$). ECR anxiety, ECR avoidance, the remaining TAS-20 dimensions, and age did not significantly contribute to the model.

To test Hypothesis 3, the distribution of alexithymia levels was examined using established TAS-20 cut-off scores. In the present sample, 18% of participants met the clinical cut-off for alexithymia (TAS-20 ≥ 61), while an additional 20% were classified as borderline alexithymic (TAS-20 ≥ 52).

4. Discussion

The present study aimed to investigate the association between levels of alexithymia, attachment styles, perceived pain, quality of life and age as well as the potential predictive role of alexithymia features and attachment styles on the physical dimension of quality of life in women diagnosed with SSc. Moreover, this study aimed to explore the prevalence of alexithymia in the same population. We hypothesized that higher levels of alexithymia and more insecure attachment styles would be associated with a worse quality of life and greater perceived pain in this clinical population. Furthermore, we expected that higher alexithymia levels, together with elevated attachment anxiety and avoidance, would significantly predict poorer perceived physical quality of life in the same sample. Finally, we hypothesized that the prevalence of alexithymia in the SSc population would be higher than that reported in non-clinical populations.

Although numerous studies have examined quality of life in individuals with SSc—consistently reporting significant impairments in both physical and mental health (Frantz et al., 2016; Hudson et al., 2009; Romanazzo et al., 2024) to our knowledge, only one study has investigated the relationship between alexithymia, pain perception, and quality of life in SSc. This study found that alexithymic SSc patients exhibited increased levels of pain and poorer mental and physical quality of life (Basta et al., 2019). In line with our hypotheses, our results align with these findings, showing that in the SSc population, alexithymia levels were associated with worse quality of life across all dimensions, including physical and psychological aspects.

Given the lack of studies examining alexithymia and its relationship with quality of life in SSc, the construct of emotional intelligence may serve as a relevant proxy. Emotional intelligence is defined as "the capacity of individuals to recognize their own and other people's emotions and to use emotional information to guide thinking and behaviour" (Karagianni et al., 2024). A recent study investigating this construct in individuals with SSc found a positive association between emotional intelligence traits and all assessed domains of quality of life, suggesting that a higher emotional intelligence is linked to a better quality of life in these patients (Karagianni et al., 2024).

These findings are consistent with the results of the present study and further support the association between affective regulation abilities and quality of life in individuals with SSc.

Moreover, the data concerning the SSc population appear to be consistent with studies on populations with other rheumatic diseases: studies in patients with rheumatoid arthritis have reported higher levels of perceived stress (Di Trani et al., 2023) and poorer health-related quality of life (Karahan et al., 2016) in association with higher levels of alexithymia. Similarly, in patients with systemic lupus erythematosus, a higher level of alexithymia has been associated with poorer health-related quality of life (Rapisarda et al., 2025) and increased psychopathological symptoms (Barbosa et al., 2011).

Beyond rheumatic conditions, alexithymic features have also been consistently associated with poorer quality of life across a range of chronic illnesses. Significant associations have been reported between higher levels of alexithymia and worse mental and physical quality of life in patients with fibromyalgia (Castelli et al., 2012; Tesio et al., 2018) as well as in patients with coronary heart disease (Nekouei et al., 2014) and in the general population (Mattila et al., 2009). The association between alexithymia and worse quality of life observed in our study may be understood as reflecting the reduced ability to identify and describe emotions, together with externally oriented thinking, that characterizes alexithymia and may be linked to difficulties in managing the emotional impact of an SSc diagnosis. Additionally, it may influence the ability to cope with symptoms and, consequently, the overall experience of the disease. This is in line with recent systematic reviews showing that alexithymia is consistently associated with impairments in emotion regulation and coping processes, including less adaptive ways of dealing with emotionally salient stressors (Oussi et al., 2023; Preece et al., 2023). These difficulties may contribute to challenges in facing chronic and emotionally demanding health conditions.

Regarding pain perception, in the present study the alexithymia dimension Difficulty in Describing Feelings is associated with perceived pain. This association can be explained by considering how difficulty in describing feelings may lead to poorer verbalization of affective states and physical alterations, making it more challenging to communicate one's condition and seek social support and help (Lumley et al., 1996). Previous literature suggests that alexithymia may be a risk factor for chronic pain since a reduced ability to label and describe emotions can lead to misinterpretations of physiological emotional responses as signs of illness (Aaron et al., 2019).

However, while in fibromyalgia the factor most strongly associated with pain is difficulty in identifying feelings (Di Tella et al., 2017), in cancer patients (Porcelli et al., 2007), as seen in neuromuscular diseases as well (Hosoi et al., 2010), this appears to be different in SSc.

This difference could be explained by the fact that, in SSc, pain is not linked to impairment in identifying and being aware of the disease, emotional signals, or interoceptive awareness.

Instead, it is connected to the ability to communicate and describe these signals. This aligns with literature on asthma (Vazquez et al., 2010), which found that difficulty in describing feelings was associated with greater impairment in the physical dimensions of quality of life. According to the authors, this occurs precisely due to a failure in symptom communication with the physician. The role of Difficulty in Describing Feelings was detailed by regression analyses: when alexithymia dimensions, attachment styles, and age were considered simultaneously in a multivariate model, Difficulty in Describing Feelings emerged as the only significant predictor of perceived physical quality of life.

This finding is consistent with previous literature highlighting the predictive role of alexithymia in physical health and quality of life (Habibi Asgarabad et al., 2023; Lanzara et al., 2024; Martino et al., 2019; Nekouei et al., 2014; Tesio et al., 2018). Notably, the specificity of the Difficulty in Describing Feelings dimension suggests that impairments in emotion verbalization may play a particularly relevant role in patients with Ssc.

Contrary to our hypothesis, attachment styles were not associated with levels of pain perception. This finding is inconsistent with a previous study that examined the relationship between attachment styles and pain perception in individuals with SSc which reported that an avoidant attachment style was significantly associated with higher levels of pain (Hicks & Kearney, 2019). This discrepancy may be attributed to the limited size of our sample compared with that of Hicks and Kearney.

In our study, anxious and avoidant attachment styles were found to be associated with poorer social and psychological quality of life. This finding can be explained by the fact that both anxious and avoidant attachment styles may influence how patients with SSc build their social relationships. We can hypothesize that this aspect negatively affects psychological well-being. In line with findings from research conducted in populations with other chronic illnesses, our results are consistent with previous studies showing that insecure attachment is associated with poorer quality of life in individuals with psoriasis (Pistorio et al., 2024), inflammatory bowel disease (Agostini et al., 2014), and fibromyalgia (Sechi et al., 2020). In the context of rheumatic diseases, a similar association has been found in patients with lupus (Bennett et al., 2011) and arthritis (Sirois & Gick, 2016). In an interesting study on arthritis, the relationship between disease severity and seeking support appeared to be mediated by insecure attachment style (Karantzas & Cole, 2011).

Regarding alexithymia levels, in this study, on 50 women with SSc 18% were classified as alexithymic (TAS-20 score ≥ 61), and 20% as borderline alexithymic (TAS-20 score ≥ 52). These findings are quite similar with those of a previous study showing a prevalence of 22.4% for alexithymia and 17.9% for borderline alexithymia in SSc population (Dattolo et al., 2021), but lower than another study which found a prevalence of 42% and 13%, respectively for alexithymia and borderline alexithymia (Basta et al., 2019). As Dattolo and colleagues (2021) noted, this discrepancy may be due to differences in sample characteristics: the mean age in our study was 52, similar to Dattolo's study (mean age=56) but lower compared to the study by Basta and colleagues (mean age = 62), and previous research has shown that the prevalence of alexithymia tends to be higher in older individuals (Mattila et al., 2006). Moreover, compared with female samples from the general population (Bressi et al., 1996), the mean TAS-20 score in our study was 49.26—slightly lower than the mean score observed in clinical populations (54.2), but clearly higher than that of the non-clinical population (43.9). These findings seem to suggest a marked alexithymic functioning in these patients; however, longitudinal studies are needed to better understand how affective regulation operates in this population.

5. Limitations

There are several limitations that must be acknowledged when interpreting these findings. Firstly, the relatively small sample size, which is partly due to the rarity of the syndrome. Additionally, due to the specificity of the clinical population examined, another limitation was the all-female sample. Future studies may benefit from larger samples size, including also male participants.

Secondly, the reliance on self-report instruments highlights the need for future research employing a multimethod assessment approach. For instance, incorporating interviews to assess both alexithymia and attachment, along with biological indices to evaluate patients' health status, could provide a more comprehensive understanding.

Thirdly, due to the cross-sectional nature of the study, it is not possible to infer causality from the observed associations. For future studies, longitudinal studies may help clarify and suggest possible causal links between the observed variables.

Lastly, the study did not include a control group from either the general population or other clinical groups, which should be addressed in subsequent research.

6. Conclusion

To our knowledge, this study is the first to investigate the relationship between romantic attachment, alexithymia, pain perception and quality of life in SSc patients, highlighting the role of both alexithymia and attachment style in the health-related quality of life in these people. Specifically, to our knowledge, this is the first study to identify an association between difficulty in describing feelings and pain perception, suggesting that psychological interventions aimed at enhancing the ability to articulate emotions and communicate them to others may have beneficial effects on pain perception in this population. Furthermore, these results have other clinical implications for psychological interventions. Attachment dimensions and related strategies of emotion regulation represent central elements for promoting patient's well-being in clinical settings. Therefore, these results suggest that it may be important to provide multidisciplinary care for these types of patients, combining medical and psychological therapies to promote the well-being of individuals with SSc. Psychologists working in this contest should focus their intervention on emotional regulation strategies, particularly on the ability to describe feelings, since promoting the ability to identify, describe and communicate feeling could be an important way to improve the quality of life both physical and psychological.

Ethical approval

This observational study received approval from the local Ethical Committee Lazio 2 (IRB protocol number: 0128753/2022). This study complied with the Declaration of Helsinki.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest statement

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Authors' Contribution

MDT, TC, AM and RR contributed to the study conception and design. AG, FG, RC and SP performed material preparation and data collection. MASV, AR and RR performed analysis and interpretation of data. MDT, AR and MASV wrote the original draft, all authors revised, edited and proofread the manuscript. RR, AM and TC supervision and project administration. All authors read and approved the final manuscript.

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