## ORIGINAL ARTICLES

# Transition readiness assessment in Portuguese adolescents and young adults with pediatric-onset rheumatic diseases: a single-center study

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## ABSTRACT

**Objective:** In this study, we aimed to assess the transition readiness levels amongst patients with childhood-onset rheumatic diseases. Additionally, we sought to identify and analyze predictive factors associated with better transition readiness skills in adolescent and young adult (AYAs) patients.

**Methods:** This is a monocentric cross-sectional study that includes patients between 14 and 26 years of age who attended outpatient pediatric and young adult rheumatology appointments between October and December of 2023 and that were diagnosed with an immune-mediated rheumatic disease before reaching 18 years of age, with at least 1 year of disease duration. Patients were presented with a questionnaire that contained demographic and clinical questions, TRACS (Questionário de Preparação da Transição para a Autonomia nos Cuidados de Saúde) questionnaire – a validated Portuguese version of the Transition Readiness Assessment Questionnaire (TRAQ), and Hospital Anxiety and Depression Scale (HADS) questionnaire. Data was analyzed to assess the significant associations between the different variables and transition readiness outcome measured by the TRACS. Descriptive statistics, statistical comparisons and logistic regression analysis were performed.

**Results:** A total of 69 patients with a median age of 20 [17.5-22.5] were included in this study. The median TRACS score was 4.41 [4.09-4.74]. Significantly higher TRACS scores were observed in patients who were female, 18 years of age or older, had a higher level of education, were employed, had active disease or that belonged to middle-class (when compared to patients belonging to upper-middle class). The logistic regression analysis demonstrated that being a female or having an educational status equal to 12th grade or superior emerged as predictors of higher transition readiness levels.

**Conclusions:** Our study identified female sex and higher level of education as predictors of increased transition readiness levels. Therefore, healthcare providers should consider these variables when assessing patients for transition readiness and focus on improving transition process, especially in male and less educated AYAs.

**Keywords:** Healthcare transition; Adolescent rheumatology; Pediatric/juvenile rheumatology; Transition Readiness Assessment Questionnaire; Mental health.

## INTRODUCTION

Over the past twenty years it has been recognized that transitional care is a subject of paramount importance in rheumatology. The transition from pediatric to adult healthcare is defined as a deliberated and organized transfer of adolescents and young adults (AYAs) diagnosed with a chronic medical condition, from child-centered to adult-centered care.[1] The objectives of transition include the empowerment of AYAs to proficiently manage their medical conditions and access healthcare services both effectively and adequately. Additionally, this process should encompass the establishment of a structured clinical pathway to facilitate the transfer and integration into adult care.[2] The achievement of a successful transition process is crucial for AYAs with chronic rheumatic immune-mediated disorders, since their likelihood of maintaining disease activity in adulthood is high and those who achieve remission can experience damage or drug-related complications.[2,3] Indeed, evidence shows that more than 40% of the patients with juvenile systemic lupus erythematosus (SLE), juvenile idiopathic arthritis (JIA), juvenile dermatomyositis

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(JDM) and juvenile spondyloarthritis (JS) have active disease during adulthood.[4,5,6,7]Nonetheless, several studies suggest that the transition process has not been reaching its desired objectives in AYAs with rheumatic diseases.[8,9,10] A high proportion of these patients do not make a successful transfer to adult rheumatology services and are therefore particularly at risk of non-adherence to health care, loss of follow-up and, consequently, unfavorable outcomes.[11]In a recent systematic review, Gray *et al.* assessed the most common barriers to transition, which included "Knowledge" and "Skills/Efficacy" domains.[12] In fact, to achieve successful rates of transition to adult care, the acquisition of disease knowledge and disease self-management skills is of extreme importance.[12,13] To address this issue, the use of standardized transition readiness assessment tools has been suggested. The non-disease-specific Transition Readiness Assessment Questionnaire (TRAQ) has been considered the most robustly validated transition readiness tool and is therefore more frequently used. This questionnaire has been translated, approved and validated in portuguese: TRACS (Questionário de Preparação da Transição para a Autonomia nos Cuidados de Saúde).[13,14] However, one limitation of these transitional readiness tools is their failure to address all aspects of transition, particularly mental health.[15] Mental health issues can have a negative impact on transition process, as patients with depression or anxiety have a higher risk of non-compliance with appointments, diagnostic auxiliary tests, and treatment, compared to those without these conditions.[16]

In this study, we aimed to assess the transition readiness levels amongst Portuguese patients with childhood-onset rheumatic diseases and identify predictive factors of better transition readiness. We consider it important to perform this analysis to develop more effective and targeted transition strategies and improve its outcomes.

## PATIENTS AND METHODS

This cross-sectional study was performed at a Portuguese tertiary hospital, after approval by the hospital's ethics committee. We recruited patients between 14 and 26 years of age, diagnosed with an immune-mediated rheumatic disease before 18 years of age, with at least 1 year of disease duration, who attended outpatient pediatric and young adult rheumatology appointments between October and December 2023. Exclusion criteria included the presence of major cognitive disorders or any comorbidity that interferes with future self-management of health, and non-Portuguese speaking individuals. During these appointments, after obtaining informed consent, patients completed a questionnaire which included three groups of inquiries.

The first set of questions included demographic and clinical data. Demographic questions included sex, age, educational background, family status, socioeconomic status, job/occupation, parents' education level, the presence of immune-mediated rheumatic disease diagnosis in the family, and possession of a driver's license. Socioeconomic status was stratified using the Adapted Graffar Scale, a social classification system developed by Professor Graffar, and adapted to Portuguese by Professor Fausto Amaro.[17] This scale is commonly employed in primary care in Portugal and serves as an indicator of the different levels of well-being within a social group. It evaluates five criteria: occupation, educational level, sources of family income, housing comfort, and the condition of the neighborhood where the family resides. Each of these criteria is scored from 1 to 5, based on the household member with the highest income. The global score is obtained by summing the scores for each section and can range from 5 to 25. Scores between 5 and 9 indicate that the patient belongs to the upper social class, scores between 10 and 13 indicate an upper middle class, scores between 14 and 17 indicate a middle class, scores between 18 and 21 indicate a lower middle class, and scores between 22 and 25 indicate a lower class.[17, 18] Disease specific information included diagnosis, age at the time of diagnosis, disease duration, current medication, disease activity and the presence of other associated diseases. The assessment of disease activity was conducted by the physician, according to each disorder: SLE Disease Activity Index (SLEDAI) for SLE, Juvenile Arthritis Disease Activity Score (JADAS) for JIA, Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) for JS, Disease Activity Score (DAS) for JDM and Visual Analogic Scale (VAS) for other diseases.[19,20,21]The second group of questions consisted of TRACS questionnaire. TRACS is a validated questionnaire that assesses the preparedness level for transition and consists of 17 questions of self-administration divided in 5 domains: 1) medication management, 2) appointment management, 3) monitoring of health issues, 4) communication with healthcare professionals and 5) management of daily activities. The responses to these questions are scored on a scale of 1 to 5, where 1 means "no, I do not know how to do this", 2 means "no, but I want to learn how to do this", 3 means "no, but I am learning to do this", 4 means "yes, I have already started doing this", and 5 means "yes, I do this whenever necessary". This response scale is aligned with the five levels in the stage of change transtheoretical model, encompassing precontemplation, contemplation, preparation, action, and maintenance. The overall score of the TRACS is calculated using the average scores of all the questions and can range from 1 to 5. Higher scores

correspond to an increased level of readiness.[13,14]The third set of questions was composed by the Hospital Anxiety and Depression Scale (HADS) questionnaire. HADS is a validated questionnaire that aims to facilitate the recognition of anxious and depressive disorders in patients suffering from medical conditions.[22,23,24] This questionnaire consists of 2 subscales: one measuring anxiety and one measuring depression, which have 7 items each and are scored separately. Every item has 4 multiple choice response options, which were scored from 0 to 3. The global scores range from 0 to 21 both for anxiety and for depression. According to HADS manual: global scores between 0 and 7 indicate "non-case", between 8 and 10 indicate a "doubtful case" result, and between 11 and 21 indicate an "definite case", suggesting the presence of the disorder.[25]Data was analyzed to assess the potential significant associations between the different variables in study and transition readiness outcome measured by TRACS. Descriptive statistics was performed, with categorical data presented as frequencies and percentages, and continuous data presented as means with standard deviations or medians with interquartile ranges, as appropriate. Statistical comparisons were conducted using Student's t-test and One-way ANOVA for normally distributed data to compare between two or more than two groups, respectively, and Mann-Whitney U test and Kruskal Wallis test for not normally distributed data. Logistic regression analysis was performed to assess predictors of high and low TRACS scores. To perform the logistic regression, a binary outcome variable was defined based on a mean TRACS score of 4.0, categorizing scores in two groups: 1) ≥ 4.0 being considered a high mean TRACS score, and 2) < 4.0 being considered a low mean TRACS score. This threshold aligns with the stage of change theoretical model, corresponding with the "action" stage associated with behavioral change. A significance level of $p < 0.05$ was considered for statistical significance. R version 4.3.2 was used for statistical analysis.

## RESULTS

A total of 69 patients were included in this study. Demographic characteristics are illustrated in Table I. A female predominance of 57% was shown. The median age of our cohort was 20 [17.5-22.5] years, with 67% aged 18 years or older. Around 67% of the patients had an educational status equal to 12th grade or superior. Sixty-two percent of the patients were still in school, while only 3% were living independently. Thirty-five percent of the patients had a family member with immune-mediated rheumatic disease. Sixty-three percent of the patients held a driver's license, when adjusted for age. The majority of patients (83%) stated that both parents achieved an educational status equivalent to 9th grade or higher. Socioeconomic distribution identified 52% of patients from the middle class, 28% from the upper-middle class, 13% from the upper class, and 7% from the lower-middle class.

Regarding clinical data, outlined in Table II, the most frequent diagnosis was JIA (33%), further stratified into oligoarticular JIA (17%), polyarticular JIA (10%), systemic JIA (3%) and enthesitis-related arthritis (3%). The prevalence of diffuse connective tissue diseases was 28%, including patients with SLE (14%), JDM (4%), Sjögren's syndrome (4%), undifferentiated connective tissue disease (3%) and mixed connective tissue disease (1%). Twenty-two percent of patients were diagnosed with spondyloarthritis, a group that included patients with psoriatic arthritis (3%). Other diagnostic categories included Behçet's disease (9%), autoinflammatory diseases - deficiency of adenosine deaminase 2 (DADA2) and mevalonate kinase deficiency (MKD) (4%), and miscellaneous conditions such as sarcoidosis and Synovitis, Acne, Pustulosis, Hyperostosis, Osteitis (SAPHO) syndrome (4%). The median age at diagnosis was 13 [10-16] years of age, and the median duration of the disease was 7 [3-11] years. Most patients in this study had active disease (67%) and were taking at least one medication (90%) including non-steroidal anti-inflammatory drugs (NSAIDs) (7%), corticosteroids (4%), classic disease-modifying anti-rheumatic drugs (DMARDs) (48%), biologic DMARDs (28%), colchicine (3%). Thirty-three percent of the patients suffered from other disease-associated conditions.

Concerning HADS, regarding anxiety, only 15% of patients were categorized as "definite cases", while 15% were classified as a "doubtful case". For depression, 7% were identified as "doubtful cases" and 1% of patients presented as a "definite case".

The median TRACS score in this study was 4.41 [4.09-4.74] and the median TRACS scores for each domain are presented in Fig. 1. Comparison of mean TRACS scores according to different variable groups, including demographic, clinical variables and HADS results, are detailed in Tables III and IV. Statistically significant differences were observed within the variable groups of sex, age, educational background, occupation, disease activity, and socioeconomic status. In detail, significantly higher TRACS scores were observed in patients who were female, 18 years of age or older, had a higher level of education, were employed or were in active disease state. Considering the inclusion of four groups within the socioeconomic status variable and the confirmation of statistically significant differences, subsequent post-hoc pairwise comparisons were conducted to discriminate which groups were significantly different from each other. This analysis revealed statis-

**Table I. Sociodemographic and HADS data of adolescent and young adults with childhood-onset rheumatic diseases**

| Variables | Number (%) |
|---|---|
| **Demographics** | |
| Age (median [IQR])[a] | 20 [17.5 - 22.5] |
| ≥18 years | 46 (66.7%) |
| <18 years | 23 (33.3%) |
| Sex | |
| Female | 39 (56.5%) |
| Male | 30 (43.5%) |
| Educational Background | |
| Inferior to 12th grade | 23 (33.3%) |
| 12th grade or higher | 46 (66.7%) |
| Family Status | |
| Living with both parents | 54 (78.3%) |
| Living with one of the parents | 11 (15.9%) |
| Living with other relatives in the same household | 2 (2.9%) |
| Living alone | 2 (2.9%) |
| Socioeconomic Status | |
| Lower-middle class | 5 (7.2%) |
| Middle class | 36 (52.2%) |
| Upper-middle class | 19 (27.5%) |
| Upper class | 9 (13.0%) |
| Occupation | |
| Student | 43 (62.3%) |
| Employed | 26 (37.7%) |
| Possession of a driver's license[b] | 29 (63.0%) |
| Father education level | |
| Inferior to 9th grade | 23 (33.3%) |
| 9th grade or higher | 46 (66.7%) |
| Mother education level | |
| Inferior to 9th grade | 15 (21.7%) |
| 9th grade or higher | 54 (78.3%) |
| Family member with immune-mediated rheumatic disease | 24 (34.8%) |
| **Hospital Anxiety and Depression Scale** | |
| Anxiety | |
| Non-case | 49 (71.0%) |
| Doubtful case | 10 (14.5%) |
| Definite case | 10 (14.5%) |
| Depression | |
| Non-case | 63 (91.3%) |
| Doubtful case | 5 (7.2%) |
| Definite case | 1 (1.4%) |

[a]Data presented as median [interquartile range]; [b]Adjusted for age

tically significant differences between the middle-class and upper-middle class groups, with individuals from the middle class presenting higher TRACS scores.

The logistic regression analysis demonstrated that being a female or having an educational status equal to 12th grade or superior emerged as predictors of higher transition readiness levels, as shown in Table V.

## DISCUSSION

Effective transition is crucial for many adolescents diagnosed with rheumatic conditions, as a substantial portion of them continues to experience active disease into adulthood. To guide this process and to facilitate the development high-quality transition models, European Alliance of Associations for Rheumatology (EULAR) and Paediatric Rheumatology European Society (PReS) developed a set of recommendations and standards for transitional care.[26] Our study aims to assess the transition readiness levels amongst patients with childhood onset rheumatic diseases and to identify and analyze predictive factors associated with better transition readiness skills.

In this study, overall TRACS score was higher than what was observed in previous studies assessing AYAs transition readiness with chronic health conditions. This divergence could be explained by the older age of our study population, suggesting that transition skills are acquired with age, as has been demonstrated in the literature. A study by Catherine A. Bingham *et al.* noted an age-related increase in certain skills such as ability to fill prescriptions, schedule appointments, arrange transportation, ask questions to doctors, manage medical insurance, and recognize symptoms of illness, and to self-reported independence.[27] Additionally, in our study, patients aged 18 years or older demonstrated to have significantly higher TRACS scores. Finding that age did not emerge as a predictor for transition readiness level was unexpected, deviating from the prevailing trend observed in the existing transition research, where age commonly serves as a predictor variable.

In contrast, our study revealed that besides the significantly higher mean TRACS scores observed in female patients compared to male patients, being female emerged as a predictor of high TRACS scores. This finding aligns with recent research trends, addressing the consistent association between female sex and higher transition readiness scores. Existing literature suggests that females often exhibit earlier maturity and achieve developmental milestones sooner than males.[28,29]

Having a higher level of education demonstrated to result in significantly higher TRACS scores and proved to be a predictor of better transition readiness. Although this association is not consistently established

## Table II. Clinical characteristics

| Variables | Number (%) |
|---|---|
| **Diagnosis** | |
| **Juvenile Idiopathic Arthritis** | **23 (33.3%)** |
| Oligoarticular | 12 (17.4%) |
| Polyarticular | 7 (10.1%) |
| Enthesitis-related arthritis | 2 (2.9%) |
| Systemic | 2 (2.9%) |
| **Spondyloarthritis** | **15 (21.7%)** |
| Spondyloarthritis | 13 (18.8%) |
| Psoriatic arthritis | 2 (2.9%) |
| **Diffuse Connective Tissue Diseases** | **19 (27.5%)** |
| Systemic Lupus Erythematosus | 10 (14.5%) |
| Dermatomyositis | 3 (4.3%) |
| Sjögren's Syndrome | 3 (4.3%) |
| Undifferentiated connective tissue disease | 2 (2.9%) |
| Mixed connective tissue disease | 1 (1.4%) |
| **Behçet's Disease** | **6 (8.7%)** |
| **Autoinflammatory Diseases** | **3 (4.3%)** |
| Mevalonate kinase deficiency | 1 (1.4%) |
| Deficiency of adenosine deaminase 2 | 2 (2.9%) |
| **Other Diseases** | **3 (4.3%)** |
| Sarcoidosis | 2 (2.9%) |
| Synovitis, Acne, Pustulosis, Hyperostosis, Osteitis (SAPHO) syndrome | 1 (1.4%) |
| Disease duration (median [IQR])[a] | 7 [3-11] |
| 1 to 5 years | 29 (42.0%) |
| 6 to 10 years | 20 (29.0%) |
| 11 to 15 years | 14 (20.3%) |
| 16 to 20 years | 6 (8.7%) |
| Age at diagnosis (median [IQR])[a] | 13 [10-16] |
| 0 to 5 years | 11 (15.9%) |
| 6 to 10 years | 5 (7.2%) |
| 11 to 15 years | 25 (36.2%) |
| 16 to 18 years | 28 (40.6%) |
| Current Medication | |
| No medication | 7 (10.1%) |
| NSAIDs[b] | 5 (7.2%) |
| Glucorticoids | 3 (4.3%) |
| Colchicine | 2 (2.9%) |
| Classic DMARD[c] | 33 (47.8%) |
| Biologic DMARD[c] | 19 (27.5%) |
| Presence of other associated diseases | 23 (33.3%) |
| Disease activity | |
| Active | 46 (66.7%) |
| Remission | 23 (33.3%) |

[a]Data presented as median [interquartile range]; [b]Non-steroidal anti-inflammatory drugs (NSAIDs); [c]Disease-modifying anti-rheumatic drugs (DMARDs)

across the literature, it represents a logical correlation, given that a higher level of education implies a heightened degree of maturity and subsequently leads to a better understanding of the disease, its treatment, and potential complications.[30]Being employed also resulted in significantly higher TRACS scores, although it did not present as a predictor of improved transition readiness. The demand for increased responsibility and independence inherent in employment resonates with the capacity for organization and interaction with other adults without their parents. While there is limited research examining the association between employment and improved transition readiness, some studies suggest a positive impact of being employed or having had a summer job on transition skills.[27,29]Patients with active disease state showed significantly higher TRACS scores, a finding that diverges from the prevailing literature, which indicates that patients with active disease typically exhibit lower TRACS scores.[31,32,33] In our specific population, 46 patients had active disease, and among them, 27 (59%) were female, and 35 (76%) had a higher education level - both predictors of higher TRACS scores. Moreover, patients with active disease may need to improve their understanding of their condition and its treatments, facilitating better communication with healthcare professionals and the ability to monitor the disease for effective control. This could positively impact all domains covered in the questionnaire and could be a reasonable explanation for our results.

Patients from the middle class presented significantly higher TRACS scores, when compared to patients belonging to upper-middle class. It is known that patients from lower socioeconomic backgrounds experience reduced quality of life, and that a chronic illness represents a substantial socioeconomic burden.[34] Furthermore, a strong association has been demonstrated between lower socioeconomic status and the adoption of unhealthier behaviors, worse access to medication, and, consequently, poor adherence to treatment and worsened disease outcomes.[35] In addition, a separate study showed that higher socioeconomic status was associated with a higher score on the TRAQ questionnaire.[29] Contrary to expectations, when examining different socioeconomic classes in our study, the assumption that higher classes would exhibit better TRACS results did not align with the observed findings. Among the 19 patients belonging to the upper-middle class, 12(63%) were female, and 8 (42%) had a higher level of education. In contrast, of the 36 patients from the middle class, 22 (61%) were female, and 25 (69%) had a higher level of education. This higher proportion of predictors of higher TRACS scores within the middle class group could have influenced the results observed in our study.
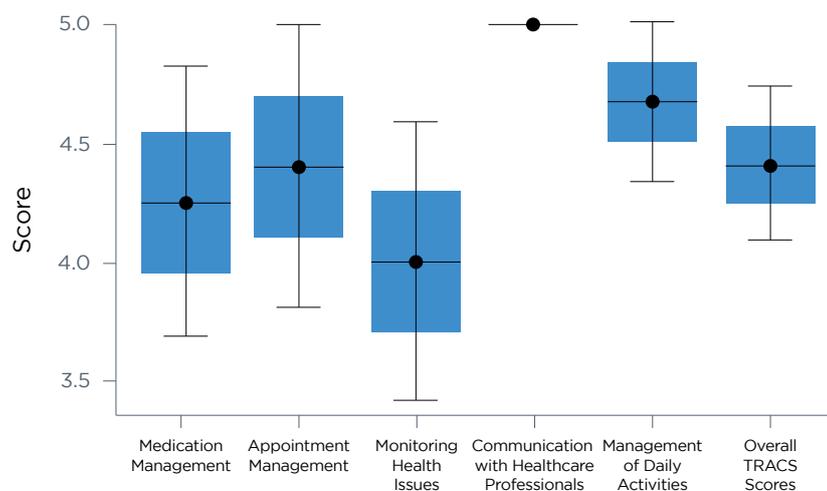
**Figure 1.** Median and interquartile range of TRACS scores by domain

When examining the mean TRACS scores for individual domains, it is possible to assess that the domain that shows better results is "communication with healthcare providers", followed by the "management of daily activities", and the "appointment management". In contrast, the domains that demonstrated the lowest scores were "monitoring of health issues" and "medication management". These domains show the worst results, because they require a deeper understanding of the disease, making them inherently more challenging to achieve. The distribution of scores across domains is comparable with findings from other studies.[28,31]Although significant results were not observed in other variables, initially we had anticipated that having a family member with an immune-mediated rheumatic disease or having a comorbid diagnosis could have a significant impact on the TRACS scores. These variables were found to be associated with better self-reported independence in a previous study, where this correlation was attributed to the fact that these patients might be more experienced navigating the medical field, and consequently be more independent in obtaining medical care.[27] For similar reasons, significant results related to disease duration or age at diagnosis were also expected, as patients with longer disease duration or an earlier age at diagnosis tend to have more interactions with the medical system and, consequently, might develop greater independence. Differences between patients under DMARDs could also be predicted, given the fact that it is recommended for these patients to be well-informed about their disease, its treatment goals, and potential risks. Consistent adherence to treatment and regular follow-up appointments are crucial among patients undergoing this kind of treatment, as well as maintaining an open and regular communication with healthcare providers, being aware of potential side effects, and actively monitoring both the side effects and the disease itself.

Our study included HADS questionnaire because it is known that the coexistence of mental health issues increases the risk of non-compliance with appointments, diagnostic auxiliary tests, and treatment, which will impact negatively on the transition readiness of these patients.[16] Additionally, Yunzhen Huang *et al.* proved that adolescents with a comorbid mental disorder use more negative coping strategies and present less transition readiness.[36] In our study, we did not observe significant differences between patients with or without mental health disorders, which was highly unexpected. However, there is an apparent trend of lower results in patients with altered HADS results. The fact that we had a small sample size of patients with anxiety (14.9%) and depression (1.4%) may have underestimated the statistical analysis of the predictors of high TRACS scores.

Indeed, our study has several limitations. A small sample size, of only 69 patients may impact the statistical power of the analysis - a larger sample size would contribute to stronger results. Moreover, being confined to a single center raises concerns about the generalizability of its conclusions, as findings from a specific geographic location may not be an accurate representation of the general population. Furthermore, the study included patients who attended outpatient pediatric and young adult's rheumatology appointments during a specific period (October to December 2023). This selection may be biased, because patients who regularly attend appointments during this time may be different from those who do not. Additionally, the cross-sectional design of the study provides a frame of transition read-

**Table III. Comparison of TRACS according to demographic and HADS groups**

| Variables | TRACS score[a] | P-value |
|---|:---:|:---:|
| **Demographics** | | |
| Age | | <0.001* |
|   <18 years | 3.65 ± 0.70 | |
|   ≥18 years | 4.47 [4.24-4.7] | |
| Sex | | 0.024* |
|   Female | 4.47 [4.2-4.8] | |
|   Male | 4.15 [3.71-4.58] | |
| Educational Background | | <0.001* |
|   Inferior to 12th grade | 3.68 ± 0.69 | |
|   12th grade or higher | 4.50 [4.27-4.73] | |
| Family Status | | 0.099 |
|   Living with both parents | 4.41 [4.09-4.74] | |
|   Living with one of the parents | 3.95 ± 0.75 | |
|   Living with other relatives in the same household | 4.74 [4.74-4.74] | |
|   Living alone | 4.74 [4.74-4.74] | |
| Socioeconomic Status | | 0.036* |
|   Lower-middle class | 3.98 ± 0.45 | |
|   Middle class | 4.12 [3.9-4.34] | |
|   Upper-middle class | 3.99 ± 0.58 | |
|   Upper class | 4.06 ± 0.49 | |
| Occupation | | <0.001* |
|   Studying | 4.06 [3.54-4.57] | |
|   Working | 4.55 ± 0.33 | |
| Possession of a driver's license[b] | | 0.310 |
|   Yes | 4.47 [4.24-4.71] | |
|   No | 4.37 ± 0.35 | |
| Fathers' educational background | | 0.575 |
|   Inferior to 9th grade | 4.27 ± 0.55 | |
|   9th grade or higher | 4.41 [3.94-4.88] | |
| Mothers' educational background | | 0.716 |
|   Inferior to 9th grade | 4.25 ± 0.56 | |
|   9th grade or higher | 4.41 [4.09-4.74] | |
| Family member with immune-mediated rheumatic disease | | 0.618 |
|   Yes | 4.38 [3.99-4.78] | |
|   No | 4.41 [4.09-4.74] | |
| **Hospital Anxiety and Depression Scale** | | |
| Anxiety | | 0.544 |
|   Non-case | 4.41 [4.12-4.71] | |
|   Doubtful case | 4.50 [4.07-4.93] | |
|   Definite case | 3.99 ± 0.64 | |
| Depression | | 0.698 |
|   Non-case | 4.41 [4.07-4.75] | |
|   Doubtful case | 4.04 ± 0.72 | |
|   Definite case | 4.00 [4.00-4.00] | |

[a]Data presented as mean ± standard deviation or median [interquartile range]; [b]Adjusted for age. *P<0.05 indicates statistical significance

### Table IV. Comparisons of TRACS scores according to clinical data groups

| Variables | TRACS score[a] | P-value |
|---|---|---|
| **Diagnosis** | | 0.137 |
| Juvenile Idiopathic Arthritis | 4.13 ± 0.57 | |
| Spondyloarthritis | 4.13 ± 0.60 | |
| Diffuse Connective Tissue Diseases | 4.59 [4.40-4.78] | |
| Behçet's Disease | 3.89 ± 0.62 | |
| Autoinflammatory Diseases | 4.45 ± 0.53 | |
| Other Diseases | 3.63 ± 1.31 | |
| Disease duration | | 0.726 |
| 1 to 5 years | 4.18 [3.68-4.68] | |
| 6 to 10 years | 4.44 [4.21-4.68] | |
| 11 to 15 years | 4.38 [4.12-4.64] | |
| 16 to 20 years | 4.15 ± 0.62 | |
| Age at diagnosis | | 0.238 |
| 0 to 5 years | 3.89 ± 0.64 | |
| 6 to 10 years | 4.20 ± 0.84 | |
| 11 to 15 years | 4.41 [4.12-4.71] | |
| 16 to 18 years | 4.44 [4.08-4.80] | |
| Current Medication | | 0.307 |
| No medication | 3.35 [2.88-3.83] | |
| NSAIDs[b] | 3.94 ± 0.77 | |
| Corticosteroids | 4.51 ± 0.39 | |
| Colchicine | 3.91 [3.75-4.07] | |
| Classic DMARD[c] | 4.53 [4.15-4.91] | |
| Biologic DMARD[c] | 4.19 ± 0.55 | |
| Presence of other associated diseases | | 0.765 |
| Yes | 4.13 ± 0.66 | |
| No | 4.41 [4.12-4.71] | |
| Disease activity | | 0.049* |
| Active | 4.47 [4.18-4.76] | |
| Remission | 3.92 ± 0.80 | |

aData presented as mean ± standard deviation or median [interquartile range]; bNon-steroidal anti-inflammatory drugs (NSAIDs); cDisease-modifying anti-rheumatic drugs (DMARDs)
*P<0.05 indicates statistical significance

### Table V. Predictors of a high TRACS score (cut off ≥ 4)

| Factors | Estimate | Std. Error | z value | P-value |
|---|---|---|---|---|
| Female | 3.602 | 1.511 | 2.38 | 0.017* |
| Age ≥18 years | 2.389 | 1.319 | 1.81 | 0.070 |
| 12th grade or higher | 2.642 | 1.303 | 2.027 | 0.043* |
| Working | 0.873 | 1.09 | 0.801 | 0.423 |
| Active disease | 0.76 | 1.260 | 0.603 | 0.547 |
| Middle class | 1.011 | 1.069 | 0.946 | 0.344 |

*P<0.05 indicates statistical significance

iness at a specific point in time. Longitudinal studies would be more useful for understanding the behavior of the factors that influence changes in transition readiness over time.

In a future project, performing a longitudinal multicentric study could be of interest. Additionally, it would be important to perform a domain-specific analysis for each TRACS domain, as they may require different skills and consequently result in different predictors of higher TRACS scores. This could contribute to a more precise understanding of the factors influencing transition readiness in specific fields.

## CONCLUSIONS

Our study found that being a female or having an educational status equal to 12th grade or superior emerged as predictors of higher transition readiness levels. Therefore, healthcare providers should consider the variables we found to be predictive, when assessing patients for transition readiness.

Given the lack of research in this field in our country, we hope that this is a starting point for a better understanding of transition readiness and its influencing factors, to achieve more effective and targeted transition strategies, and improve the outcomes of this critical period in patient care.

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