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Geographic, personal and clinical determinants of brace-wearing time in adolescents with idiopathic scoliosis

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Abstract

Purpose: Adherence to brace treatment is crucial for its effectiveness in AIS. The study aimed to verify the impact of geographic, personal and clinical variables on adherence to brace wear.

Methods: Design: retrospective cross-sectional study of consecutively collected participants at a tertiary referral institute.

Inclusion criteria: AIS, one-year of follow-up after bracing, and use of a thermal sensor. The outcome was adherence and tested predictors were age, gender, ATR, TRACE, Cobb, curve type, Risser, and back pain at baseline, brace type and prescription time, income, living in the North, Centre, or South of Italy, city of residence size, distance from the sea, and height above sea level. The chi 2 test was used to investigate the association between the categories and adherence. The logistic regression model tested the predictors. STATA 17.0 MP was used.

Results: We included 1904 adolescents, age 13.8 ± 1.6 (1597 females), worse scoliosis curve 35 ± 11° Cobb. The prevalence of good compliers, with more than 75% of the prescribed dosage, was 90.8%. Factors associated with higher adherence were living in the North of Italy ($p = 0.003$), prescription > 20 h per day ($p = 0.008$), female gender ($p = 0.008$), younger age and lower Risser sign (age 10 to 13: $p = 0.000$; Risser 0-1: $p = 0.013$). The regression model explained 4% of the variability.

Conclusion: Living in the North of Italy, longer hours of brace prescription, female gender, younger age, and lower Risser sign increased adherence to brace wear. Nevertheless, there are other unknown factors that contribute to the explanation of adherence in this highly compliant population.

Keywords: Adherence; Adolescent idiopathic scoliosis; Brace; Predictors.

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