The Impact of Disease Activity and Pain Level on Productivity in Rheumatoid Arthritis (RA) Patients

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Background: Rheumatoid arthritis (RA) is a disabling and progressive chronic autoimmune disease with associated burden in terms of work disability. Objectives: To investigate the impact that RA associated pain and disease activity have on the level of work impairment patients experience, using data from the Burden of Rheumatoid Arthritis across Europe: a Socioeconomic Survey (BRASS).

Methods: Data were extracted from BRASS, a societal perspective observational RA dataset across 10 European countries (EUS, Denmark, Sweden, Hungary, Poland and Romania). 476 RA specialising clinicians provided information on 4,079 adult patients; of these, 2,087 patients completed corresponding questionnaires about the burden of RA. 646 patients were included in the analysis, having completed a patient questionnaire and with the physician having provided a DAS28-CRP score.

Descriptive analysis was used to explore the association between pain level, disease activity and productivity impairment due to RA. Summary measures were derived from BRASS data in which the Work Productivity and Activity Impairment Questionnaire was used to quantify impairment caused by the patient’s RA, taking into account not only the proportion of time the patient is absent, but also the impact on their ability to perform their job. The relationship between disease severity (as measured by DAS28-CRP score), pain level (measured across 4 categories from ‘no pain’ to ‘severe pain’) and overall work impairment was further explored using a generalised linear model where pain level and severity were modelled as explanatory variables against the overall work impairment outcome, while adjusting for covariates including age, gender and BMI.

Results: Of the 646 included in the analysis, average age was 54.6(11.5) years; mean (standard deviation); average DAS28-CRP score was 3.1(1.2), and average disease duration was 7.1(10) years; median (interquartile range). Descriptive analysis indicated that with greater levels of pain and/or disease activity, patients suffered increased levels of both work and activity impairment. The average marginal effect of covariates was calculated from regression outputs. Both pain level and DAS28-CRP score independently had a statistically significant association with work impairment; a unit increase in DAS28 score meant an increase in work impairment of 4.7% (p<0.01), whereas existence of ‘mild’, ‘moderate’ or ‘severe pain’ versus ‘no pain’ increased impairment by 33.3%, 43.4% and 45.0% respectively (p<0.05), with confounders age, gender, BMI and either DAS28-CRP or pain level held constant.

Conclusions: Results from this large, multinational survey in Europe show that subjective domains of the disease, such as pain, could be as important as objective measures of RA activity in affecting a patient’s ability to work; analysis suggested both pain and severity independently have a significant impact on work and activity impairment due to RA.
