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EDITORIAL

Towards a better understanding of the role of psychological variables in arthritis outcome research

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See related research by Brionez *et al*., http://arthritis-research.com/content/11/6/R182

Abstract

In the previous issue of *Arthritis Research and Therapy*, Brionez and colleagues show that helplessness, depression, and passive coping account for significant variability in self-reported functional limitations in patients with ankylosing spondylitis, beyond the effect of age, inflammation and radiographic damage. Since the perspective of the patients in the experience of health is increasingly important, insight into the type of psychological variables, the pathways by which they influence health and the approaches for how to deal with these variables are challenging.

> *We are disturbed not (only) by events, but*
> *(also) by the views which we take of them.*
> (Epictetus, born 55 AD)

Likely, the majority of rheumatologists have been trained in the belief that health outcomes are mainly explained by biomedical factors related to the disease. In the previous issue of *Arthritis Research and Therapy*, the biomedical model is challenged by the article of Brionez and coworkers [1]. The authors show that the total explained variation of the Bath Ankylosing Spondylitis Functional Index increased from 32% to 56% when adding various psychological variables (depression, coping and beliefs about controllability) to the demographic and clinical variables. Although the Bath Ankylosing Spondylitis Functional Index and other patient-reported outcome measures have been criticized by experts in ankylosing spondylitis because of their subjective nature, this paper helps to understand mechanisms underlying these effects and quantifies the magnitude of their influence.

What are psychological variables?

Psychology is the discipline that attempts to understand the role of mental functions in individual and social behavior. In medicine, psychology became more widely integrated when the biopsychosocial model of disease was adopted by the World Health Organization, through the approval of the International Classification of Functioning, Disability and Health (ICF) (Figure 1) as the framework and classification of health.

In the biopsychosocial model, functioning and health results from a complex interplay of the health components – *body functions and structures*, *activities* and *participation* – and the contextual factors – *environmental factors* and *personal factors* [2]. In the ICF, psychological variables can be found either within the body functions or within the personal factors. Depression, as in the study by Brionez and coworkers [1], is part of the body functions (emotional function) – and as such can be the direct consequence of the health condition or an emotional reaction to the presence of the disease. The increased prevalence of depression in patients with inflammatory rheumatological diseases is partly attributed to a direct effect of cytokines, including IL-1, IL-6 and TNFα [3,4]. On the other hand, helplessness or internality (beliefs about the controllability of a disease) [5] and coping (cognitive and behavioral strategies that persons develop when confronted with stressors) [6] are considered personal factors as they determine the individual psychological context through which a health condition can affect functioning and disability (including depression). The ICF framework also recognizes that the personal factors are not necessarily fixed, but can be influenced by aspects of health. The learned helplessness theory showed that the severity and unavoidability of a

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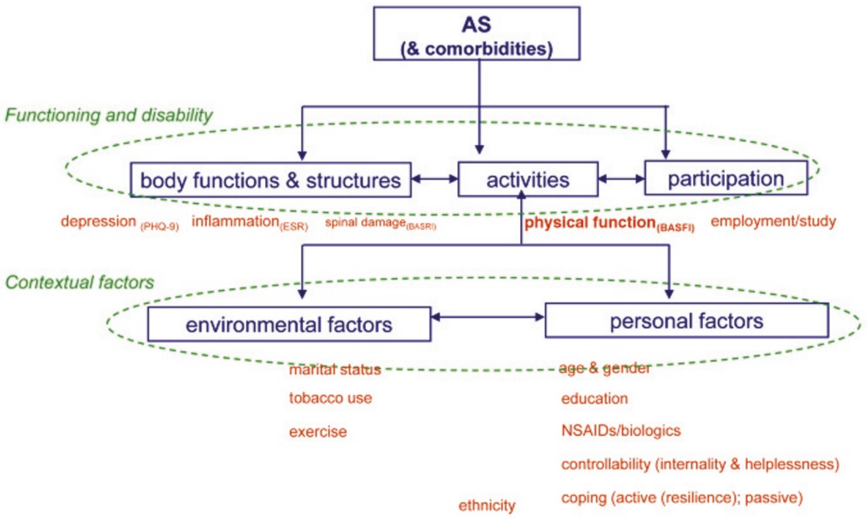

Figure 1. Current framework of functioning and health. The World Health Organization International Classification of Functioning, Disability and Health and the position of the variables included in the study by Brionez and colleagues [1]. AS, ankylosing spondylitis; BASFI, Bath Ankylosing Spondylitis Functional Index; BASRI, Bath Ankylosing Spondylitis Radiographic Index; ESR, erythrocyte sedimentation rate; NSAIDs, nonsteroidal anti-inflammatory drugs; PHQ, Patient Health Questionnaire to assess depression.

(health-related) stressor makes a vulnerable personality more likely to become helpless [7].

Brionez and colleagues admit that the cross-sectional design of the present study will not be able to unravel directionality or causality of the interplay between psychological variables and health [1]. Their analyses merely describe associations – nothing more, but also nothing less. The strength of this study is that not just one psychological variable but a broad range of psychological variables, each representing a different construct, were analyzed in one study. Each construct considered was shown to be independently important.

Remarkably, those psychological variables considered negative (depression, helplessness and passive coping) were associated with worse self-reported physical function, while positive beliefs (internality and active/adaptive coping) were not associated with better physical function. This observation contradicts the impression of rheumatologists that persons with ankylosing spondylitis adapt positively to their (slowly progressing) disease, and tend to underestimate the health impact of the disease. In clinimetric research, adaptation is seen as the major mechanism of a positive reference shift, which refers to the idea that patients do not rate their health in reference to an absolute standard but in reference to a relative standard that shifts over time [8]. The fact that active/adaptive coping in this study is not associated with better self-reported functioning does not exclude that a reference shift towards under-reporting takes place. It could be that a positive reference shift through adaptation is present but cannot be picked up by the instruments used in the study, or that adaptation is not the major determinant of a positive reference shift.

How to deal further with psychological variables in rheumatology outcome research

The main challenge emerging from the manuscript of Brionez and colleagues is how to deal with the role of psychological variables in self-reported outcomes in ankylosing spondylitis and likely in rheumatology in general. This issue probably becomes increasingly important. With earlier and powerful treatments, a diagnosis (a stressful event!) may impact the patient in terms of mental and behavioral beliefs, and will probably influence the experience of health. Existing research suggests that psychological factors not only affect self-reported physical health in ankylosing spondylitis, but also mental health and worker participation, pointing to the societal relevance of the issue [9]. Along this line, it should also be realized that indirect utility instruments, such as the EuroQol 5 dimensions and Short-form 6 dimensions, are primarily based on self-reported health profiles [10,11]. The self-report profiles are mapped only in a second step onto societal preferences, which then provide the quality of life years that are considered by decision-makers when interpreting cost–utility ratios during allocation of resources. This contradicts with the paradigm in health economics that 'objective' societal preferences should be used, with the aim of avoiding the influence of 'subjective' mechanisms such as coping [12]; clearly EuroQol and Short-form health profiles are patient-reported and therfore lack the objectivity strived after.

Further research into the causal (temporal) relation between the type and strengths of stressful (health) events on psychological variables and biomedical factors would help improve our understanding of, and insight into, health outcomes. Identification of a core set of psychological variables from the increasingly large number on offer, and consensus on the instruments used to measure them, is one of the necessary steps. Self-reported instruments are not necessarily imperfect; it is rather our means of interpretation and our methods to assess and analyze them that need to be improved.

Abbreviations

ICF = International Classificiation of Functioning, Disability and Health;
IL = interleukin; TNF = tumor necrosis factor.

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Competing interests

The author declares that they have no competing interests.

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