

Rheumatoid arthritis

Understanding disability

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Control of disease activity has the greatest effect on physical functional disability so should we bother with multidisciplinary rehabilitation care programmes?

For many years the researchers of the department of rheumatology at the University of Leiden have contributed to our understanding of the effectiveness and cost effectiveness of specific rehabilitation interventions^{1,2} and the provision of comprehensive care for patients with rheumatoid arthritis.^{3,4,4a} The most recent study by van den Hout *et al*, published in this issue of the *Annals of the Rheumatic Diseases*,⁵ found that compared with inpatient and day patient team care, clinical nurse specialist care provides equivalent quality of life and utility, at lower costs. This result challenges the current but largely unproven assumption that multidisciplinary team care is both necessary and superior. The objective of this editorial is to discuss some conceptual and methodological issues relevant to the interpretation of this result and to draw some conclusions for the design of future studies examining the effectiveness and cost effectiveness of multidisciplinary care.

Basis for the design and interpretation of multidisciplinary care programmes in patients with RA is our understanding of disability

Which mediators determine disability? How large is the relative contribution of these mediators to disability? An understanding of the relative contribution of mediators which have been treated by drugs compared with rehabilitation interventions—for example, multidisciplinary team care, provides us with an understanding of the relative potential of these interventions. When modelling disability the new framework and classification of “functioning, disability, and health” or ICF by the WHO⁶ can be useful.⁷ Although in RA there are no comprehensive models explaining disability, as assessed by measures of quality of life, a number of studies have modelled physical functional ability, which is the most important aspect of disability in RA.⁷⁻¹⁰ These studies consistently found that physical functional disability—for example, measured with the Health Assessment Questionnaire (HAQ) is determined by disease activity, structural damage, and psychosocial variables. It was also found that the relative contribution of these variables to

physical functional ability as measured by the HAQ differs in early as compared with late disease.^{8,9} Overall, variables directly associated with the disease, including disease activity, structural damage, and pain, seem to explain between 50 and 70% of the variance in HAQ scores. From this it becomes clear that optimal control of disease activity is of utmost importance to avoid physical functional disability and loss of health related quality of life. The “dominance” of the variables related directly to disease in determining physical functional ability and health related quality of life raises the question whether there is anything left to gain from interventions directly targeted at improving functioning—for example, by multidisciplinary rehabilitation care programmes.

“Do patients gain from interventions to improve their functioning?”

Unfortunately, there are virtually no studies that have comprehensively examined the relative contribution of, for example, muscle strength, joint mobility and stability, endurance or balance and coordination to physical functional ability and health related quality of life. Arguably, the best understood variable for its contribution to physical functional ability and treatment is muscle strength. Muscle weakness is a common and important problem in RA.¹¹ In our own small study we found that muscle strength explained 12% of the overall variance in HAQ scores, in addition to the directly disease related variables which explained 50%.¹² The relatively small contribution of muscle strength to physical functional ability may help explain why it is more difficult to demonstrate significant and clinically relevant improvements in HAQ scores with exercise as compared with disease modifying antirheumatic drug and non-steroidal anti-inflammatory drug treatments. Also, in rehabilitation interventions, the sensitivity, or rather the insensitivity, of current outcome measures,¹³ which is always important, becomes even more important. Thus, the relatively small contribution of rehabilitation targets, as in the case of muscle

strength, and the questionable sensitivity of the HAQ^{2,14} and quality of life measures¹⁵ are possible alternative explanations for the lack of a difference in the cost effectiveness of the three programmes examined by van den Hout.

Also, clinically relevant changes in disease activity are likely to “erase” the relatively small effects of rehabilitation interventions on physical functional ability. In this context it is most interesting that there was a significant and important improvement in disease activity in all care groups in the studies of the multidisciplinary care programmes by van den Hout *et al*. Possibly, therefore, the assumed additional effect of rehabilitation interventions provided in the inpatient and outpatient multidisciplinary care group as compared with nurse practitioner care were “erased”. In other words, in a group whose disease activity is improving it may not be possible to show a difference in physical functional ability or quality of life attributable to multidisciplinary care targeted towards improving functioning. In the future we may thus prefer to evaluate the effectiveness and cost effectiveness of multidisciplinary care targeted at improving functioning and health in patients with stable disease activity.

The effectiveness of multidisciplinary care programmes to improve functioning should be studied in patients with controlled and stable disease activity

It may also be questioned whether the HAQ and quality of life measures used in the studies are indeed appropriate outcome measures for the evaluation of multidisciplinary care. Let us look at one aspect that was described in the study: “Prescription of joint splints, adaptive equipment, and house adaptations, if needed”. Because of the scoring algorithm of the HAQ, which “punishes” the use of aids or devices, such prescriptions may indeed lead to a worse HAQ score. It might be asked whether we can expect a clinically relevant change in quality of life measures with the use of aids and devices. Instead, we may expect a difference in measures specific to hand function or the use versus non-use of aids and devices in subsets of patients with hand problems requiring such interventions. This emphasises that in the evaluation of multidisciplinary care we may need to examine defined subsets of patients “at risk” or with specific problems and that we may need to use function-specific health status instruments instead of the currently used condition-specific health status instruments such as the HAQ.

In early RA secondary prevention of disability by improving muscle strength, endurance, mobility, coordination, and learning of ergonomic behaviours may be as or more important than the rehabilitation of disability

In patients with a rather short disease duration, as those included in the study by van den Hout *et al*, the training of muscle strength, mobility, physical endurance, and coordination may be more important for secondary prevention than rehabilitation. In secondary prevention we expect improvements—for example, in muscle strength, mobility, physical endurance, and coordination, but we do not necessarily expect changes in physical functional ability or health related quality of life. Therefore, if we are evaluating secondary prevention it would be sufficient to demonstrate a significant and clinically relevant improvement in these measures at the end of the programme and the maintenance of the difference over months and years. A difference in physical functional ability could be expected only after months and years with the deterioration of the variables and a concordant worsening of physical functional ability in the control group. Because the study by van den Hout *et al* was designed from a rehabilitation perspective, body functions, including muscle strength, were not measured and taken into account in the economic analysis. It would therefore be important to measure the intervention targets directly in future studies.

If we consider socio-behavioural interventions we may again question the assumption that they should translate into improved physical functional ability or quality of life scores. It seems more appropriate to measure these constructs directly. For socio-behavioural variables it would again seem important to identify patients at risk of behaviours associated with worse outcomes and to design a study to allow for an appropriate subset analysis.

Finally, we need to consider the fascinating fact that disease activity, and accordingly the HAQ and quality of life scores, improved in all programmes even if the optimisation of drug treatment was not a target intervention of the multidisciplinary care programmes. The most likely reason is the “human factor”, the importance of which has been nicely considered by the assessment of satisfaction by van den Hout *et al*. The human factor obviously is important in both

multidisciplinary team and nurse specialist care and has an impact on compliance and treatment adherence and other aspects of both rehabilitation targets and drug treatment. It is also important to recognise that some of the variables explaining physical functional ability are related to each other. For example, disease activity is related to both pain and the cognitive coping process, which in turn is related to physical and psychological disability. Coping therefore seems to have a mediating role.¹⁶ Accordingly, we may widen our understanding of functioning as the unidirectional consequence of the disease process to a more complex multidirectional understanding of disease and functioning depending on the person and the environment.¹⁷

In conclusion, the studies by van den Hout *et al*^{4,5} provide evidence that patients with RA benefit from comprehensive care. Interestingly, programmes targeted towards the improvement of functioning may at the same time lead to an improvement of disease activity. Whether the additional cost of multidisciplinary care as compared with nurse practitioner care is worthwhile in patients with short disease duration needs to be further investigated. Also, we have to be cautious and not generalise the findings of the study by van den Hout *et al* to patients with longstanding disease, who may be more likely to benefit from rehabilitation interventions. Future work should consider the design of the study in patients with stable disease activity. Additionally, it should also measure directly the most important rehabilitation targets of multidisciplinary care, which are also important for prevention.

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