Cost-utility analysis of a multidisciplinary job retention vocational rehabilitation program in patients with chronic arthritis at risk of job loss

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
The study examined a multidisciplinary, job-retention, vocational, rehabilitation programme for patients with chronic arthritis (CA). The programme was compared with usual care. The multidisciplinary team consisted of a coordinator, a rheumatologist, a social worker, a physical therapist, an occupational therapist, a psychologist and an occupational physician. The programme consisted of a basic, systematic assessment followed by education, vocational counselling and guidance, and medical or non-medical treatment. The total duration of the intervention, which varied depending on the contents of the individual guidance and treatment process, ranged from 4 to 12 weeks. Usual care consisted of normal outpatient care initiated by a treating rheumatologist. Patients were referred to other health professionals for their work-related problem if their rheumatologist considered it necessary.

Type of intervention
Rehabilitation.

Economic study type
Cost-utility analysis.

Study population
The study population comprised patients with a chronic rheumatic disease with arthritis involvement of 1 or more joints (rheumatoid arthritis or systemic lupus erythematosus) according to the American College of Rheumatology classification criteria, ankylosing spondylitis according to the modified New York classification criteria, or reactive arthritis, psoriatic arthritis or scleroderma. Patients were either still working or had used less than 1 year of sick leave.

Setting
The setting was outpatient. The study was carried out in the Netherlands.

Dates to which data relate
The effectiveness and resource use data were gathered between March 1999 and June 2001. The price year was 2005.

Link between effectiveness and cost data
The costing was carried out prospectively on the same sample of patients as that used in the effectiveness analysis.

Study sample
In the primary clinical trial, 140 patients were included (66 in the usual care group and 74 in the intervention group). However, given the objective of the current economic evaluation, 19 patients were excluded because of unavailable initial cost data. Thus, the final study sample included 121 patients (59 in the usual care group and 62 in the vocational rehabilitation group). The mean age was 44 years (range: 24 to 57) in the usual care group and 43 years (range: 21 to
58) in the vocational rehabilitation group. The proportion of female participants was 42% in both groups. The mean health assessment questionnaire score was 0.83 (+/- 0.53) in the usual care group and 0.72 (+/- 0.5) in the vocational rehabilitation group.

**Study design**

This was a prospective, multi-centre, randomised clinical trial that was carried out in 11 hospitals. Details of randomisation and blinding were not reported. The referring rheumatologists were informed of the treatment allocation. The length of follow-up was 2 years. No patient was lost to follow-up at the final assessment.

**Analysis of effectiveness**

The primary clinical end point was health-related quality of life. This was estimated using the EuroQol classification system, the EuroQol rating scale (RS), Short-Form 6D (SF-6D) and Time Trade-Off. Details of each tool were reported. The utility values were assessed at baseline and every 6 months up to 24 months' follow-up. The analysis of the clinical study was conducted on an intention to treat basis, meaning that all patients were considered in the analysis of effectiveness. At baseline, the study groups were comparable in terms of their clinical and demographic characteristics.

**Effectiveness results**

Differences between the groups in utility values did not reach statistical significance at year 1 and year 2, regardless of the instrument used.

For example, the 2-year utility values were 1.248 (+/- 0.348) in the usual care group and 1.276 (+/- 0.264) in the intervention group (difference 0.028; p=0.62) when using the EuroQol classification system. The corresponding values when using the SF-6D were 1.313 (+/- 0.201) and 1.288 (+/- 0.159), respectively (difference -0.025; p=0.46).

In both randomisation groups together, all four utility measures showed better results during the second year than during the first year. This difference between both years was statistically significant according to the RS and the SF-6D.

**Clinical conclusions**

The effectiveness analysis showed that the measures of health-related utility were similar between groups.

**Measure of benefits used in the economic analysis**

The summary benefit measure used was the quality-adjusted life-years. These were calculated as the area under the utility curves. However, the clinical trial showed that no statistically significant difference in utility was observed between groups, thus no summary benefit measure was used or combined with the costs. In effect, a cost-minimisation analysis was carried out.

**Direct costs**

The analysis of the costs was performed from a societal perspective. It included the direct costs associated with the vocational rehabilitation programme, health care services and the patients’ expenses. The direct costs were broken down into time spent by health care professionals, use of alternative medicine, day patient hospitalisations, inpatient hospitalisations, home nursing care, aids and appliances at home and at work, home help, unpaid labour, and hours of informal care. The unit costs and the resource quantities were presented separately. Resource use was derived directly from the sample of patients enrolled in the clinical trial. Only those patients with valid economic data were included. The costs came from published prices and market prices. Aids and appliances at work and at home, such as special office furniture and modifications to the house, were valued as reported by the patients. Discounting was not relevant and was not performed. The price year was 2005.
Statistical analysis of costs
Missing data on resource use were imputed by carrying forward the preceding observation. As in the analysis of utility, differences between the groups in costs and resource use were tested using double-sided bootstrapping.

Indirect Costs
Productivity costs lost because of CA were included in the analysis, in accordance with the societal perspective adopted. The unit costs and the quantities of resources used were given separately. Resource use came from the patients’ records. The value of paid labour per hour was estimated as the reported monthly gross income divided by the official working hours per month. As in the analysis of the direct costs, discounting was not performed and the price year was 2005.

Currency
Euros (EUR). The authors reported that euros could be converted into US dollars ($) using the 2005 Dutch purchasing power parity index, EUR 1 = c $1.13.

Sensitivity analysis
The issue of uncertainty was not addressed in a formal sensitivity analysis. Bootstrapping was carried out to calculate standard deviations around the mean values.

Estimated benefits used in the economic analysis
See the ‘Effectiveness Results’ section.

Cost results
The total vocational rehabilitation programme costs were EUR 1,426 (+/- 438).

The total health care costs were EUR 5,657 (+/- 5,450) in the usual care group and EUR 6,504 (+/- 3,724) in the vocational rehabilitation group (difference EUR 847; p=0.33).

The total non-health care costs were EUR 28,849 (+/- 28,171) in the usual care group and EUR 22,134 (+/- 23,155) in the vocational rehabilitation group (difference -EUR 6,715; p=0.16).

The total societal costs were EUR 34,506 (+/- 29,799) in the usual care group and EUR 28,638 (+/- 24,122) in the vocational rehabilitation group (difference - EUR 5,868; p=0.24).

The reduction in costs for the vocational rehabilitation group was mainly due to the reduction in lost productivity (paid and unpaid work).

Synthesis of costs and benefits
A synthesis of the costs and benefits was not performed as a cost-minimisation analysis was carried out.

Authors’ conclusions
The vocational rehabilitation programme was as effective and expensive as the usual approach for patients with chronic arthritis (CA) at risk of job loss.

CRD COMMENTARY - Selection of comparators
The rationale for the choice of the comparators was clear as the new rehabilitation programme was compared with the traditional approach. Both strategies were accurately described. You should decide whether they are valid comparators in your own setting.
Validity of estimate of measure of effectiveness
The effectiveness evidence came from a published clinical trial, which was appropriate for the study question. Limited information on the design and other characteristics of the trial were reported, but the use of intention to treat analysis, the multi-centre nature of the study, and the baseline comparability of the study groups should have enhanced the internal validity of the clinical estimates. Further, four instruments were used to derive the primary clinical end point. As the authors acknowledged, the main limitation of the study was the small sample size. It was thus difficult to assess whether the difference in clinical outcomes lacked statistical significance because of true similarity or because of the small sample size.

Validity of estimate of measure of benefit
No summary benefit measure was used given the cost-minimisation design of the analysis.

Validity of estimate of costs
The broadest possible viewpoint was adopted in the study, and the cost categories included were consistent with the societal perspective. In particular, the inclusion of indirect costs appears relevant given the nature of the disease and the impact on productivity losses. Extensive details of the unit costs and resource quantities were provided, which will help in replicating the analysis in other settings. Statistical analyses of the costs were carried out. However, the cost estimates were specific to the study setting and the use of alternative sources of data was not investigated. The price year was reported, thus facilitating reflation exercises in other time periods. As for the clinical analysis, the sample size of the study was very small and this may be the main reason for the lack of statistically significant cost-differences. Mean differences were, in fact, substantial in favour of the vocational rehabilitation programme, but very high standard deviations were found.

Other issues
The authors stated that their findings did not agree with those from another published trial on vocational rehabilitation, perhaps because of differences in the type of intervention delivered and the characteristics of the patient population involved. In terms of the issue of the generalisability of the study results to other settings, the authors stated that the Dutch setting of the labour market might differ from that in other countries, thus making the results of the analysis difficult to transfer to other settings. In addition, sensitivity analyses were not carried out, which limits the external validity of the analysis. The authors noted that the cost of the vocational rehabilitation programme can vary considerably, depending on the content and the context.

Implications of the study
The study was unable to show that, in comparison with conventional care, the vocational rehabilitation programme for patients with CA reduced the risk of job loss.

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