Effect of a self-management program on patients with chronic disease

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
A 7-week chronic disease self-management programme for people with chronic conditions was investigated. A pair of educators (professional leaders and/or peer leaders), who had received 20 hours of training, led the small-group intervention using a detailed manual.

Type of intervention
Secondary prevention

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients over 18 years of age, who had one or more chronic diseases and were physically able to attend a 7-session programme.

Setting
The setting was the community. The economic study was carried out in the USA.

Dates to which data relate
The effectiveness and resource use evidence related to a one-year period (1998). The price year was not reported.

Source of effectiveness data
The effectiveness data were derived from a single study.

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

Study sample
No power calculations to determine the sample size were reported. Nine of the 11 regions of the managed care organisation chose to participate. These implemented the programme in one or more of their centres. Twenty-one sites, in total, implemented the programme through 68 classes. The programme was offered to 703 patients with at least one chronic disease, who were identified through their physicians or case managers, by announcements in the health centre or the health plan newsletter, or by letters sent to high utilisers. A total of 613 (87%) completed the informed consent. The mean age of the participants was 62 years. Twenty-seven per cent were male and 83% were non-Hispanic white. The participants from chronic diseases relating to the lung (21%), heart (24%), diabetes (26%) and arthritis (42%).
Study design
A before-and-after study design was employed. Patients who gave informed consent completed the baseline questionnaires, attended classes, and received follow-up questionnaires by mail at 6 and 12 months.

Analysis of effectiveness
The analysis was, in essence, based on intention to treat due to the before-after design i.e. any dropout from the before group was identically matched to a drop-out from the after group (they were the same person). The four main classes of outcomes assessed were health status, health behaviours, perceived self-efficacy, and health service utilisation.

The health status measures included self-rated health (based on the National Health Interview Survey), disability (a modified version of the Health Assessment Questionnaire disability scale), and health distress (a modified version of the Medical Outcome Study health distress scale). Illness intrusiveness was assessed by the impact of the disease on aspects of one's daily life such as physical well-being and diet, work and finances, marital stability, sexual and marital relations. Shortness of breath, pain, and fatigue were assessed using visual numerical scales.

The health behaviours and self-efficacy measures included frequency of exercise, cognitive symptom management, and communication with physician health-care providers.

The health services utilisation measures included visits to physicians, visits to hospital emergency departments, the number of hospitalisations, and the number of nights spent in hospital, as reported by the patients.

Since, of the 613 patients, 489 (80%) completed the 1-year questionnaire, the analysis was repeated with the last data, either baseline or 6 months.

Effectiveness results
At 1 year, there were statistically significant improvements at the 5% level, in 7 of the 9 health status measures. These were reported as the change in mean (+/- standard deviation). The improvements were observed in fatigue (-0.3 +/- 2.4), shortness of breath (-0.3 +/- 2.5), pain (-0.3 +/- 2.5), social activity limitation (-0.2 +/- 1.0), illness intrusiveness (-0.2 +/- 1.2), depression (-0.1 +/- 0.5) and health distress (-0.3 +/- 1.2).

No significant differences from baseline were estimated in either self-rated health or disability.

There was a statistically significant reduction in the number of visits to emergency departments (0.1 fewer), (p<0.05). There was also a trend towards fewer visits to physicians (0.4 fewer), (p=0.19), and fewer days in hospital (0.5 fewer), (p=0.12).

The outcomes were the same whether the programme was led by peers or professionals. Reanalysing to allow for dropouts was stated to produce essentially the same results, but with a stronger trend toward fewer physician visits, (p=0.08)

Clinical conclusions
The patients enrolled in the self-management programme reported small but, on average, statistically significant improvements in health status, health behaviours, and self-efficacy. They also reported fewer visits to emergency departments.

Measure of benefits used in the economic analysis
No summary measure of benefit was used in the economic analysis. The study was therefore a cost-consequences analysis.

Direct costs
The costs were analysed from the perspective of the managed care organisation. This included the costs of the
intervention, hospitalisations and visits to emergency departments. The quantities were estimated from the patients’ reported health care utilisation. The unit costs employed were $1,000 per hospital day and $100 per emergency department visit. The quantities and the costs were reported separately.

**Statistical analysis of costs**
Paired t-tests were used to assess the changes between baseline and one year.

**Indirect Costs**
No indirect costs were analysed.

**Currency**
US dollars ($).

**Sensitivity analysis**
A sensitivity analysis was performed. Non-respondents were included in the analysis and the last data collected for them were carried forward, as reported above.

**Estimated benefits used in the economic analysis**
Not applicable due to the cost-consequences design. Also, the study was analysed as a cost-minimisation study, even though the intervention resulted in statistically significant improvements in a few health-related outcomes.

**Cost results**
Over the one-year period, the study participants had a mean reduction in hospitalisation of 0.97 days, (p=0.08), and 0.2 fewer visits to emergency departments, (p=0.01).

The overall cost-saving due to the reduction in utilisation was estimated to be $990 per participant.

The cost of the self-management programme was $200 per participant.

The self-management programme resulted in savings of $489 per participant.

**Synthesis of costs and benefits**
Not applicable.

**Authors’ conclusions**
One year after exposure to the programme, most patients experienced statistically significant improvements in many health outcomes and had fewer visits to emergency departments. The authors concluded that the programme was potentially cost-saving for the managed care organisation.

**CRD COMMENTARY - Selection of comparators**
The authors justified their decision to compare the chronic disease self-management programme in a "real-world" setting with usual care, by beneficial evidence from prior controlled trials.

**Validity of estimate of measure of effectiveness**
The authors acknowledged that the analysis used a before-and-after study design, which could have had an impact on
the validity of the results in terms of possible confounding. However, there could have been no selection bias. The study sample was representative of the study population but there were 20% non-responders at 1 year, which could have impacted the results. However, the results of the main analysis were confirmed by the sensitivity analysis to allow for dropouts.

**Validity of estimate of measure of benefit**

The authors did not derive a summary measure of health benefit. However, the study was conducted as a cost-minimisation analysis, although, in fact, there was apparently an improvement in the health outcomes.

**Validity of estimate of costs**

All of the major categories of costs appear to have been analysed. The utilisation results were treated stochastically, whereas the overall costs were not. No sensitivity analyses of the prices were reported.

**Other issues**

The authors made partial comparisons of their findings with those from other studies. The authors presented their results in full. The issue of generalisability to other settings was partially addressed. The authors reported some limitations of their study. In particular, the participants in this study were volunteers, and the results could be applicable to volunteers from managed care organisations only.

**Implications of the study**

The authors recommend the implementation of the chronic disease management programmes, as they are likely to result in significant benefits in terms of health gains and cost-savings.

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**Other publications of related interest**


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