Adult day care for the frail elderly: outcomes, satisfaction, and cost

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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
An adult day-care programme for elderly patients was examined. The intervention offered the frail older persons a personalised programme of therapeutic and preventive activities, which were developed after an in-depth evaluation of specific needs and abilities. The main objectives of the programmes were to reduce psychosocial problems, maintain the patient's ability to perform activities of daily living, and maintain satisfactory levels of health-related behaviour (nutrition and exercise). A further objective of the programme was to offer respite to families and caregivers. The programme staff generally included nurses, recreation technicians, a special care counsellor, a driver and a receptionist. Occasionally, a rehabilitation technician, an occupational therapist and a psychosocial worker were available. Patient participation was about 6 hours/day, once or twice a week.

Type of intervention
Supportive care in the community.

Economic study type
Cost-effectiveness analysis.

Study population
The study population consisted of patients older than 60 years of age, referred to any day centre. Patients were excluded if they did not speak French or English, as were those too cognitively impaired to be interviewed or without a caregiver. Patients referred to the centre for specialised treatments, those with urgent needs and those with a paid caregiver, were also excluded. Some inclusion criteria for the day centres were also reported.

Setting
The setting was secondary care. The economic study was carried out in the province of Quebec, Canada.

Dates to which data relate
No dates for the effectiveness and resource use data were reported. The price year was 1991.

Source of effectiveness data
The effectiveness evidence came from a single study.

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

Study sample
Preliminary power calculations were performed. The study was designed to have 80% power to detect an effect size
equivalent to 0.5 standard deviation. Of a total of 370 clients initially referred to the participating centres, 35 (9.5%) were excluded because of urgent need and 55 (14.9%) were ineligible for other reasons. Thus, there were 280 eligible clients. However, 29 (10.4%) refused to participate, leaving 251 clients that were allocated to study groups. Information on loss to follow-up is provided in the 'Study Design' section.

**Study design**
This was a multicentre, randomised, controlled trial. Six centres were involved in the study. Patients randomised to the intervention group were admitted to the day centre, while those allocated to the control group spent 3 months on the waiting list for admission. The study coordinator carried out the randomisation, which was stratified by participating centre and was performed by permuted blocks of six. The median follow-up period (time from enrolment and patient interview) was 3.5 months (range: 2.9 - 5.5). The overall loss to follow-up was 39 clients.

Thirty-nine participants were not available for assessment at the end of the study period. Thus, the final sample of 212 was included in the analysis. There were 108 clients in the intervention group and 104 in the control group. The clients in the intervention group had a mean age of 76.4 (+/- 7.6) years, and 74.1% were women. The clients in the control group had a mean age of 78 (+/- 6.9) years, and 73.1% were women. Sub-samples of patients were considered for specific analysis. The sample of patients considered for the caregiver analysis comprised 89 clients in the intervention group and 93 clients in the control group.

**Analysis of effectiveness**
The analysis of the clinical study included all subjects who were eligible and randomised, but for whom both baseline and follow-up data were available. The final sample size varied by outcome measure. The primary health outcomes used in the effectiveness study were:

- the frequency of depressive symptoms, as measured using the Center for Epidemiologic Studies Depression Scale (CES-D), which ranges from 0 to 60 (high score corresponds to more severe symptoms);
- anxiety symptoms, as evaluated using the Spielberg's State-Trait Anxiety Inventory (STAI), whose score ranges from 20 to 100 (higher scores indicate more anxiety);
- the client's functional status, as measured using the Older Americans Research and Service (OARS) Multidimensional Functional Assessment Questionnaire, which uses six categories of functional capacity (1 = excellent, 2 = good, 3 = mildly impaired, 4 = moderately impaired, 5 = severely impaired, and 6 = completely impaired);
- caregiver burden, as estimated using the Novak and Guest's Caregiver Burden Inventory which ranges from 0 to 96 (higher score indicates more burden); and
- the clients' and caregiver's perceptions of the services (intervention group only).

Several statistical analyses were conducted to investigate the impact of potential confounders and bias. Excluding the 39 clients lost to follow-up, the study groups were shown to have been comparable at baseline in terms of basic demographic characteristics. However, at baseline, the controls were slightly less cognitively impaired while caregivers in the intervention group had a lower level of education and were more likely to live with the client.

**Effectiveness results**
The CES-D scores changed from 16.9 (baseline) to 16.5 (3 months) in the intervention group, and from 15.7 (baseline) to 14.6 (3 months) in the control group.

The anxiety score changed from 39.7 (baseline) to 39.2 (3 months) in the intervention group, and from 38.1 (baseline) to 36.4 (3 months) in the control group.

The ratings of client's functional status changed from 4.2 (baseline) to 4.3 (3 months) in the intervention group, and from 4.1 (baseline) to 4.2 (3 months) in the control group.
The caregiver burden score changed from 23.2 (baseline) to 21 (3 months) in the intervention group, and from 23.5 (baseline) to 19.8 (3 months) in the control group.

None of the differences reached statistical significance.

Clients felt that services at the centre were useful in reducing depression (56.2%), anxiety (47.3%), dependence (29.8%) and loneliness (64.9%).

Caregivers stated that services at the centre were useful for the client in reducing depression (41.8%) and anxiety (50%). They were also useful for the caregiver in terms of more time to pursue their own activities (39.6%), and in terms of an improved relationship with the client (25.6%).

Clinical conclusions
The effectiveness analysis showed that the adult day-care programme was moderately appreciated by both clients and their caregivers, but that there was no statistically significant difference in any of the outcome measures considered in the analysis.

Measure of benefits used in the economic analysis
The health outcomes were left disaggregated and no summary benefit measure was used in the economic study. Thus, a cost-consequences analysis was carried out.

Direct costs
The cost/resource boundary adopted in the study was not explicitly reported. The health services included in the economic evaluation were hospital care, physician care, home care services, outpatient professional services, day hospital, long-term care and transportation. Discounting was not performed since the costs were incurred over approximately 3 months (average follow-up). The unit costs were not reported separately from the quantities of resources used. Resource consumption was estimated using data collected prospectively alongside the clinical trial through client and caregiver interviews. The unit costs were derived from several sources, such as the Quebec Health Insurance Board claims, published data, market prices, and interviews with individuals within the health care organisations. No dates for resource use were reported. The price year was 1991.

Statistical analysis of costs
Standard statistical analyses were conducted to test the statistical significance of differences in the total costs. These were presented as mean values (+/- standard deviations).

Indirect Costs
The indirect costs were not included in the economic evaluation.

Currency
Canadian dollars (Can$).

Sensitivity analysis
No sensitivity analyses were performed.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.
Cost results
The mean cost of the services per client was Can$2,935 (+/- 5,536) in the control group and Can$2,138 (+/- 4,530) in the control group.

The costs for medical and professional care, institutional long-term care and hospital care were higher in the control group, but home-based long-term care was higher in the control group.

None of the differences in the costs reached statistical significance.

Synthesis of costs and benefits
Not relevant as a cost-consequences analysis was carried out.

Authors’ conclusions
Both the clients and caregivers perceived the adult day-care programme for elderly patients as useful. However, there was no statistically significant difference in any outcome measure, or the overall costs, between patients participating in the programme and those who did not receive any specific day-care intervention.

CRD COMMENTARY - Selection of comparators
The comparator was not adequately described. The authors described it as the absence of the programme, which presumably means usual care, yet this usual care incurred a mean cost of $2,138. There are also other care strategies. You should decide whether it represents a valid comparator in your setting.

Validity of estimate of measure of effectiveness
The analysis of the effectiveness was used a randomised controlled trial, which was appropriate for the study question. Six study centres were and, of these, three enrolled patients throughout the entire enrollment period and the other three enrolled patients for 6 to 9 months of the enrollment period. Confounding should not be a problem since the patients were randomised, the study groups were comparable at baseline, and the authors conducted some statistical analyses to take into account potential bias and confounding factors. Selection bias should be low due to the consecutive selection of patients and randomisation to groups. The analysis was primarily conducted on a treatment completers only basis, which tends to exaggerate the treatment effect. The authors selected a 3-month period in the waiting list on the grounds that they considered a longer waiting period to be unethical. Power calculations were performed, but the authors noted that the study was underpowered to detect significant differences among the patient sub-groups. The authors stated that the lack of a statistically significant difference in the outcome measure may have been because the interventions performed at the day-care centres were not sufficiently operationalised in terms of specific indicators such as depression and anxiety.

Validity of estimate of measure of benefit
No summary benefit measure was used in the economic analysis. The analysis was therefore categorised as a cost-consequences study.

Validity of estimate of costs
The perspective adopted in the study was not stated. Hence, it was unclear whether all the relevant categories of costs were included in the analysis. The source of the cost data was reported. The unit costs and the quantities of resources used were not reported separately. The price year was given, thus assisting reflation exercises in other settings. Standard statistical analyses of the costs were carried out and high-variability in the estimated costs was observed. The cost estimates were specific to the study setting. The authors stated that the costs of home services were likely to have been underestimated due to a lack of reliable information at the time of the study.
Other issues
The authors stated that their results were similar to those from other published studies. However, the issue of the generalisability of the study results to other settings was not addressed and no sensitivity analyses were conducted. Thus, the external validity of the analysis was low. The study enrolled a group of elderly individuals referred to day-care centres and this was reflected in the conclusions of the analysis.

Implications of the study
The study failed to detect a significant impact of the day-care programme for elderly patients in terms of the psychosocial and functional status of the clients involved. Future studies should focus on maintaining high levels of participation.

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