The 2-year costs and effects of a public health nursing case management intervention on mood-disordered single parents on social assistance

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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
A two-year proactive, public-health, nursing case-management (health promotion and problem-solving) programme for single parents on social assistance, was examined. A public health nurse visited all participants to offer the study intervention, and reviewed the parents' needs and use of resources using a case management, problem-solving, empowerment-enhancement approach. The areas discussed with the parent were employment/education, enriched child programmes, health/housing and family function.

Type of intervention
Other: Patient care management.

Economic study type
Cost-effectiveness analysis.

Study population
The study population consisted of single parents eligible for social assistance, thus with wages below the poverty line for the size of the family.

Setting
The setting was the community. The economic study was carried out in Ontario, Canada.

Dates to which data relate
No dates for the effectiveness and resource use data were reported. The price year was 1995.

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 patient sample as that used in the effectiveness study.

Study sample
Power calculations were conducted on the basis of an earlier study. These suggested that, in order to detect statistically significant differences in the outcome measures, a sample of 306 households would have been required to retain approximately 216 cases during the 2-year study period. The method of sample selection was not reported. Of the initial 306 single patients enrolled in the study, the final sample included only 129 (69 in the treatment group and 60 in the control group). The remaining patients (177) were lost to follow-up.
Study design
The study was a randomised controlled trial. Randomisation was achieved using a computerised sequence schedule that blocked randomly after every fifth or tenth participant (household) to ensure equal numbers at baseline in both treatment groups. The data were collected on nursing and social service visits. The follow-up lasted two years and 177 patients were lost, mainly due to the inability to locate the patients. Those lost to follow-up were similar to those who remained in the study. However, a greater proportion of participants were working part-time, disabled or unable to work for pay, unemployed, receiving unemployment insurance, and older. There were also other differences that reached statistical significance. These all suggested that the parents remaining in the study had greater needs and utilised more social insurance services. The authors stated that interviewers evaluating the outcome were blinded to the purpose of the study.

Analysis of effectiveness
It appears that the analysis of the clinical study was conducted on the basis of treatment-completers only. The primary health outcome measures used in the effectiveness study were:

- the SAS-SR (social adjustment scale), which measures social functioning on a self-rated 5-point scale involving three broad areas (work, family and leisure);
- the UM-CIDI (University of Michigan, Composite International Diagnostic Interview), to evaluate change in parent mood;
- the ICRS (indices of coping response scales), which focuses on the cognitive impairment and behavioural coping responses after a stressful event; and
- productivity, measured in terms of use of social assistance.

At baseline, the study groups were comparable in terms of regional representation, gender, marital status, age of children, presence of any major emotional disorder, levels of poor social adjustment, and expenses for use of ambulatory health, social services and hospitalisation. However, the study groups differed in terms of several variables. For example, maternal age, number of children per family, condition of disabled/unable to work for pay, presence of mental disorders, circulatory problems, medication for mood or nerves, costs of adolescent school counsellor, hospital costs, and mother’s allowance as source of income. This suggested that intervention patients were more poorly adjusted parents, and that they used fewer hospital services in comparison with the controls.

Effectiveness results
In terms of the SAS-SR, there were improvements of 11.3% in the intervention group and 6.6% in the control group.

In terms of the UM-CIDI, there was a 29 to 39% reduction in the prevalence of mood disorders (depression and dysthymia) in each group.

There was no improvement in coping behaviour in either of the study groups.

In terms of productivity, a greater proportion of parents in the intervention group (22%) did not use any form of social assistance in the prior 12 months in comparison with non-users in the control group (10%).

Due to the small sample size, none of the differences in any outcome measure reached statistical significance. The authors performed some statistical analyses to control for some variables, which could have been represented confounding factors. The results of the analysis did not change.

Clinical conclusions
The effectiveness study showed that the two groups were similar with respect to all outcome measures used in the analysis. However, there was a non significant trend towards better outcomes in all measures, but these improvements
could not be statistically detected due to the small sample size.

**Measure of benefits used in the economic analysis**
No summary benefit measure was used since no statistically significant difference was observed in any of the outcome measures used in the effectiveness study. Thus, it appears that a cost-minimisation analysis has been conducted.

**Direct costs**
Discounting was not relevant because the costs were incurred during two years. The unit costs were not reported separately from the quantities of resources used. The health services included in the economic evaluation were visits to the family physician, physician specialist, emergency room, physiotherapist, psychiatrist, psychologist, occupational therapist, social worker, family counsellor, children's Aid, and adolescent/school counsellor. Also, probationary services, child care/day care services, subsidised day care services, nutritionist, naturopath/homeopath, public health nurse, VON, St Elizabeth Visiting Nurses' Association, chiropractor, homemaker, meals on wheels, employment retaining services, recreation services, 911 services, and ambulance. The cost/resource boundary adopted in the study was that of the Canadian national health service. Savings were estimated by calculating the annual value of exiting from social assistance. Resource use was collected using the Health and Social Service Utilization Questionnaire, which was developed in an earlier study. The unit costs were estimated on the basis of the average charges used in Ontario, as reported in an earlier study (see Other Publications of Related Interest). The savings were estimated on the basis of the Social Assistance and Pension Rate. The price year was 1995.

**Statistical analysis of costs**
The Mann-Whitney test was used to compare the costs in the two study groups, due to non-homogeneity of variances and skewed data.

**Indirect Costs**
Indirect costs were not included in the economic analysis.

**Currency**
Canadian dollars (Can$).

**Sensitivity analysis**
Sensitivity analyses were not conducted.

**Estimated benefits used in the economic analysis**
See the 'Effectiveness Results' section.

**Cost results**
The total direct costs without hospital costs added were Can$1,270.95 (+/- 2,938.59) in the intervention group and Can$1,247 (+/- 3,574.03) in the control group.

When hospital costs were added, the total direct costs were Can$1,776.63 (+/- 3,544.45) in the intervention group and Can$1,987 (+/- 5,231.77) in the control group.

The difference in costs did not reach the statistical significance.

Only the cost for nurse visits was significantly higher in the intervention group (Can$17.33 per person per annum) than in the control group (Can$0.62 per person per annum), (p=0.04).
Synthesis of costs and benefits
Not relevant as a cost-minimisation analysis appears to have been conducted.

Authors' conclusions
A two-year proactive public health nursing case management programme for single parents on social assistance did not result in extra cost from the perspective of a system of national health and social insurance. However, the study showed a trend toward better outcomes associated with the social assistance programme in comparison with parents receiving only income maintenance services.

CRD COMMENTARY - Selection of comparators
The rationale for the choice of the comparator was clear. Self-directed use of health and social services consisting of income maintenance (social assistance) services was selected, as it represented the standard approach for low-wage single parents in Canada. You should decide whether it represents a valid comparator in your own setting.

Validity of estimate of measure of effectiveness
The analysis of effectiveness used a randomised controlled trial, which was appropriate for the study question. The study sample appears to have been representative of the study population. The method of randomisation was described. The study was partially blinded. Power calculations were performed. However, due to the substantial loss of parents at the final follow-up assessment, the authors acknowledged that the study was underpowered to detect statistically significant differences in the main outcome measures. The study groups were not comparable at baseline and the authors conducted some statistical tests to take into account potential confounders and bias. These issues may affect the internal validity of the analysis.

Validity of estimate of measure of benefit
No summary benefit measure was used in the analysis.

Validity of estimate of costs
The perspective adopted in the study was reported, and it appears that all the relevant categories of costs have been included in the analysis. A detailed breakdown of the costs was reported, but the unit costs were not analysed separately from the quantities of resources used. The price year was appropriately reported, thus making reflation exercises in other settings feasible. Statistical analyses of the costs and quantities were conducted to compare the estimated data. Sensitivity analyses were not performed. The source of the cost data was reported. Resource consumption was evaluated prospectively alongside the clinical trial. The authors could have investigated the generalisability and any uncertainty surrounding the cost results more thoroughly.

Other issues
The authors compared their findings with those from other studies. They did not, however, address the issue of the generalisability of the study results to other settings. The authors stated that, due to the substantial loss to follow-up and the difference between those who remained in the study and those who were lost, caution is required when generalising the study results to all single parents eligible for social assistance.

Implications of the study
The authors suggest that further research, based on studies with appropriate power calculations, should be conducted to estimate a statistically significant improvement of several outcome measures due to the study intervention.

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