The costs and effects of a nutritional education program following work-site cholesterol screening


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
Nutritional education program following work-site cholesterol screening.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Employees at 40 small work-sites with serum cholesterol levels of 200mg or more at baseline measurement were included in the study. Males and females of working age, predominantly white and educated mostly to high school level or above were included. More than 60% of workers had been tested for cholesterol in the last 5 years, and 24% knew this to be high.

Setting
The practice setting was community, in the workplace. The economic study was carried out jointly by the state departments of Colorado, Minnesota, Missouri and Washington, USA.

Dates to which data relate
The dates for effectiveness and resource data were not stated. The indirect costs associated with a loss of earnings were based on the average US wage rate in 1990.

Source of effectiveness data
Evidence of outcomes was derived from a single study.

Link between effectiveness and cost data
Costings were carried out at the same sample of work sites as that from which the effectiveness data were collected, and at the same time.

Study sample
Work sites were randomised to the intervention or control group. All individuals at the same workday received the same treatment. The authors did provide some justification for the study sample. By selecting work sites much of the selection bias problems associated with public screening can be avoided, as a more natural mix of subjects is likely. The sample size was not determined by power calculations. did not determine. 40 work sites were enrolled to the study: 20
to the intervention group and 20 to the control group. 2067 individuals were screened at the baseline cholesterol test and 846 individuals were found to meet the initial criteria of a serum cholesterol level above 200mg. 463 individuals made up the control group, and 383 individuals made up the intervention group.

Study design
This was a randomised controlled trial carried out at multi-sites. Subjects were followed-up for 1 year, reporting at 6 months and 12 months. Compliance at 6 months' follow-up was 62% for the control group and 71% for the intervention group. At 12 months this was 59% for both groups. The reasons for this loss to follow-up included workers having left or being unavailable at the time of follow-up.

Analysis of effectiveness
Analysis was based on intention to treat. The primary health outcome was the percentage of cholesterol reduction. This was a clinical measurement using Reflotron or Kodak testing equipment. The control and intervention groups did not differ with any statistical significance on any of the baseline characteristics. There were, however, small differences in age, education and cholesterol testing history: adjustments to results were made for these variables.

Effectiveness results
Workers receiving only usual education (control group) were found to have a 0.4% decrease in cholesterol level at 6 months, whereas those receiving special education (intervention group) were found to have a 1.2% decrease (P>0.05). At 12 months those decreases were 3% and 6.5%, respectively. The intervention of special education was associated with an additional decrease in cholesterol level over usual education of 3.5% (P < 0.01).

Clinical conclusions
A nutrition education program following cholesterol screening can have a meaningful impact on long term cholesterol levels.

Measure of benefits used in the economic analysis
The percentage of cholesterol level reduction was the main outcome measure used in the economic study. This was obtained by direct measurement by clinicians. Cholesterol levels were measured in the workplace at baseline, at 6 months and at 12 months from the intervention.

Direct costs
Costs have not been discounted. The quantity of work loss due to treatment was recorded. The quantities of preparation, travel, on-site service and follow-up time were recorded for each service provider. Costs for each work site were then calculated by summing provider wages, screening subjects' wages, and the costs of travel, supplies, postage and telephones. The estimation of quantities was based on actual data. For costing screening subjects’ wages the US average wage in 1990 was used. Dates for other data were not provided. Costs were presented broken down as fixed or variable.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was performed in this study.

Estimated benefits used in the economic analysis
The intervention had an incremental benefit over the comparator of a 3.5% decrease in cholesterol levels (p<0.01).
Cost results
The total costs per person were $27 for screening only (it is assumed that this is meant to be the comparator) and $75 for those receiving the education program as well.

Synthesis of costs and benefits
The intervention was both more effective and more expensive than the comparator so cost-effectiveness needs to be discussed in incremental terms.

Authors' conclusions
A behaviourally-based nutrition education program following cholesterol screening can have a meaningful impact on long-term cholesterol levels at a low cost.

CRD Commentary
The effectiveness study was of very high quality based on a single study using a multi-centre randomised controlled trial. Results were analysed regardless of compliance with the intervention according to the randomised design, that is based on ‘intention to treat’. However, two problems undermined some of the power of this study. First, the rate of compliance with the intervention was low, only 74% in the special education group attended any classes, and only 47% actually watched the instructional video. Second, the loss to follow-up was high with only 59% of each group being retested at 12 months. The economic study was not thorough and was not appropriate to the problem considered. This was an effectiveness study with some costs added in. There was no proper comparison of intervention and comparator in terms of cost-effectiveness. Because the intervention performed well in the effectiveness study, the authors’ conclusion had already been made before any economic analysis. A comparison of costs was made and the intervention, although more expensive than the comparator, was deemed to be low cost. No sensitivity analysis was performed. Opportunity cost was not discussed.

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