Cost effectiveness of a mass media-led anti-smoking campaign in Scotland

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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
Mass media-led anti-smoking campaign. There were three interrelated features of the adult anti-smoking campaign: mass media advertising including television, outdoor press and posters; a free telephone helpline; and a specially devised booklet.

Type of intervention
Primary prevention and treatment.

Economic study type
Cost-effectiveness analysis.

Study population
General public, television audience, and subsequently the adult callers to an anti-smoking telephone helpline.

Setting
A country-wide campaign. The economic study was carried out in Scotland.

Dates to which data relate
Effectiveness and resource use data were based on the period 1992-93. 1992-1993 prices were used.

Source of effectiveness data
The evidence for final outcomes was based on a single study.

Link between effectiveness and cost data
Costing was retrospectively performed on the same patient sample as that used in the effectiveness study.

Study sample
Power calculations were not used to determine the sample size. A panel of 970 adults were recruited from a 1-in-10 random sample of adult callers to the telephone helpline. The 970 adult callers originally recruited to the panel study contained 848 smokers. The estimated number of adult callers to Smokeline over 12 months was 40,782 (lower estimate) or 82,782 (higher estimate). Information was gathered from a 10% sample (n=8,547) of adult callers to Smokeline. The number of adult callers willing to be contacted for future interviews were 6,154.

Study design
This was a prospective before-and-after study of adults who smoked who were interviewed subsequently at three weeks,
six months and one year follow-up. 819 were interviewed at three weeks, 701 at three months and 607 at one year. Data on smoking status at 12 months and on the period of time as a non-smoker were available for 587 individuals. Counsellors with backgrounds in addiction or medicine had received an intensive telephone skills training course served on Smokeline.

**Analysis of effectiveness**
The basis for the analysis of effectiveness was treatment completers only. The primary health outcome used in the analysis was the rate of smoking cessation. Callers to Smokeline were similar to adult smokers (information based on a survey in Scotland) in terms of age and employment status.

**Effectiveness results**
At the 12-month follow-up point, of the 607 individuals in the sample, 23.6% reported themselves as non-smokers, 42.5% reported quitting at some point during the preceding period, 19.6% were smoking less and 21.6% had switched to a lower tar brand of cigarettes. At the 12-month follow-up point, 9.88% of individuals reported themselves as non-smokers and as having given up for at least six months in the previous year.

**Clinical conclusions**
Overall, the results from the telephone campaign compare favourably with those from other smoking cessation evaluations, suggesting that a mass media-led campaign may be a more effective medium for encouraging smoking cessation than others.

**Modelling**
The Prevent model, a model developed in the Netherlands which simulates the effects of health promotion interventions on mortality, was used to estimate the long-term benefits of mortality reductions throughout the Scottish population.

**Measure of benefits used in the economic analysis**
The number of smoking cessations and life years saved were used as the outcome measures in the economic analysis. The Prevent model was fed by Scottish data to estimate mortality without any health intervention (to find the autonomous trend in mortality). Then, the difference between the intervention trend and autonomous trend represented the effect of the intervention on forecast mortality.

**Direct costs**
Discounting was not applied due to the short period of the cost analysis. Quantities were not analysed separately. Costs were classified into five main groups: developmental and maintenance costs; mass media advertising; telephone helpline; information booklet; and research costs. Staff involved were identified and estimates made retrospectively, of the amount of time input allocated for this campaign by each individual. The study concentrated on the resources used by the HEBS in the developmental stage and first year of the campaign. An attempt was made to estimate the costs that were directly attributable to adults since at the time of the study a youth anti-smoking campaign was being run simultaneously with the Smokeline campaign. The total costs of the telephone helpline were calculated based on lower, central, and upper estimates of the number of adult callers as a proportion of all callers to Smokeline (40%, 61%, and 82%, respectively). The effects of two potential confounding factors on total costs were not assessed since it was not clear how to take into account the potential influence of children calling on behalf of adults or the loss of genuine adult callers as a result of children calling. 1992-1993 price data were used.

**Indirect Costs**
Not included.
Currency
UK pounds sterling ()

Sensitivity analysis
One-way and two-way sensitivity analyses were performed on the effects of youth campaign costs and the number of adult callers as a proportion of all callers to Smokeline.

Estimated benefits used in the economic analysis
If the central estimate of the percentage of all smokers in Scotland who made contact with the helpline (4.5%) is combined with the estimated period prevalence quit rate of 9.88%, this would suggest that approximately 0.44% of smokers in Scotland quit as a direct consequence of the campaign (4,029 or 8,179 individuals according to the lower and upper estimates of adult callers). Assuming that only 0.44% of individuals will potentially give up smoking as a result of the campaign, the Prevent model predicts that a total of 11,182 life-years will be gained over a 30-year period.

Cost results
The total costs, excluding the youth campaign, were estimated to vary between 1,316,302 and 1,376,621. Mass media advertising represented nearly two-thirds of the total cost, with television making up two-thirds of media costs. The costs of the helpline and the smoking cessation guide were broadly comparable and together represented nearly a quarter of the total cost of the campaign.

Synthesis of costs and benefits
Cost per individual cessation and cost per life year were used as the measures of cost-effectiveness analysis. The results for a 9.88% quit rate ranged from 168 per individual cessation to 369 per individual cessation. The cost per life year varied according to the assumptions adopted, ranging from 92 per life year to 199 per life year. If life-years were discounted at 6% to take account of their timing, the cost per life year gained was estimated to be within the range of 304 to 656.

Authors' conclusions
Provided that the benefits of smoking cessation predicted are broadly accurate, and that the assumed level of quitting can be directly attributed to the Smokeline, then this general public anti-smoking campaign appears to have been cost-effective.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator is clear.

Validity of estimate of measure of benefit
As the authors noted, the measurement of effectiveness and, in particular, the differentiation of cause and effect is arguably less robust with respect to smoking cessation programmes than for many other forms of intervention.

Validity of estimate of costs
Resource quantities were not reported separately from costs. Adequate details of the methods of cost estimation were given. The retrospective nature of the cost analysis may have adversely affected its internal validity.

Other issues
The authors' conclusions were justified given the uncertainties in the data. The issue of generalisability to other settings or countries was not addressed although appropriate comparisons were made with other studies.
Implications of the study
The findings lend further support to the accumulating evidence that mass media-led anti-smoking initiatives with a social support component are an effective and cost-effective mechanism for promoting smoking cessation in the general public.

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