Cost effectiveness of treatment for alcohol problems: findings of the randomised UK alcohol treatment trial (UKATT)

UKATT Research Team

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
The study compared two treatment options for alcohol problems. The treatment options were motivational enhancement therapy and social behaviour and network therapy, which is a new social treatment option. Social behaviour and network therapy, comprising up to eight 50-minute sessions, helps patients to build social networks to support change in their drinking and associated behaviours. Motivational enhancement therapy, comprising up to three 50-minute sessions, combines counselling in the motivational style with objective individual feedback from earlier assessment.

Type of intervention
Treatment.

Economic study type
Cost-utility analysis.

Study population
The characteristics of the study population were described in the original study by the UKATT Research Team (2005, see ‘Other Publications of Related Interest’ below for bibliographic details). The study population comprised people who would normally seek treatment for alcohol problems at a British treatment site. People aged under 16 were excluded from the study, as were those who were illiterate, could not name a contact, or who intended to leave the area. Also excluded were people with psychotic illness or severe cognitive impairment, people for whom alcohol was not the main problem, and those who were under treatment for an alcohol problem.

Setting
The setting was alcohol treatment sites. The economic study was carried out in the UK.

Dates to which data relate
The effectiveness data were collected from 1999 to 2001. All costs were derived from sources published between 1998 and 2002. The cost data were reported to reflect 2000 to 2001 prices.

Source of effectiveness data
The effectiveness data were derived from a single study that was described in full in a separate paper (UKATT Research Team, 2005).

Link between effectiveness and cost data
The costing was carried out prospectively on the same sample of patients as that used in the effectiveness study.
Study sample
Few details on the trial protocol were given in the present study. Hence, the following information on the trial was obtained from the parent study (UKATT Research Team 2005).

According to the power calculations performed, the authors aimed to recruit 720 patients at seven different sites and to interview 80% of the sample within 12 months in order to achieve an 80% power, at a 5% significance level, in identifying a standardised difference (positive or negative) of less than one quarter between the therapies. Initially, of the 3,241 clients who presented to the sites with new alcohol problems, only 2,748 (84.4%) were screened for eligibility; 493 (15.2%) were not screened. Of those screened, 1,157 (42.1%) refused to participate in the study and 650 (23.7%) were characterised as ineligible. A total of 941 eligible clients were referred to the trial entry interview, but only 836 (88.8%) actually attended. Ninety-four (11.2%) clients withdrew consent and were not allocated to a treatment group. Finally, 742 (88.8%) clients were randomly allocated to the two treatment groups, 442 (56.9%) to the motivational enhancement group and 320 (43.1%) to the social behaviour and network therapy group. The study also included 52 therapists appropriately trained on the methods of therapy under investigation.

Study design
The analysis was based on a pragmatic multi-centre (seven treatment sites) randomised trial. Stratified randomisation was achieved through “on-line” computer randomisation performed by a remote randomisation service at York, UK. The participants were interviewed in their homes by researchers at 3 and 12 months after entry to the trial. Only at the 12-month follow-up were the interviewers blinded to the intervention. Fifty-three (7%) clients were lost to follow-up at 3 months and 125 (16.8%) at 12 months overall. The reasons for withdrawals at 3 months were not provided. At 12 months, 12 clients had died, 35 did not respond and 78 could not be contacted.

Analysis of effectiveness
The analysis of clinical data was conducted on an intention to treat basis. The primary outcomes used were changes in alcohol consumption, alcohol dependence and alcohol-related problems over the 12-month period. Alcohol consumption was estimated using form 90, and was summarised as the number of drinks per drinking day and the percentage of days abstinent. Alcohol dependence was estimated using the Leeds dependence questionnaire. Alcohol-related problems were estimated using the alcohol problems questionnaire and the gamma-glutamyl transferase liver function test. The authors did not report whether the patient groups were comparable at analysis. However, they did state that adjustments for baseline differences were performed.

Effectiveness results
The covariance analysis conducted demonstrated that the two therapy groups had similar outcomes at 3 and 12 months. The only statistical significant difference was in the adjusted mean physical component score of the SF-36. The difference in favour of the social group was 1.31 (95% confidence interval, CI: 0.05 - 2.57).

The aggregated effect of both treatments was explored by comparing the mean adjusted scores at baseline and after 3 and 12 months for all responders. The adjusted proportion of days abstinent improved from 29.5% (95% CI: 26.1 - 32.9) at baseline to 42.7% (95% CI: 38.2 - 47.2) at 3 months and 46% (95% CI: 40.8 - 51.2) at 12 months.

The mean adjusted alcohol consumption fell from 26.8 drinks per drinking day (95% CI: 24.9 - 28.7) at baseline to 17.9 (95% CI: 16.3 - 19.5) at 3 months and 19.2 (95% CI: 17.2 - 21.2) at 12 months.

The mean adjusted scores on the Leeds dependence questionnaire fell from 17.0 (95% CI: 15.9 - 18.1) at baseline to 11.9 (95% CI: 10.8 - 13.0) at 3 months and 10.9 (95% CI: 9.6 - 12.2) at 12 months.

The mean adjusted scores on the alcohol problem questionnaire fell from 12.3 (95% CI: 11.7 - 12.9) at baseline to 6.8 (95% CI: 6.1 - 7.5) at 3 months and 6.1 (95% CI: 5.3 - 7.0) at 12 months.

The mean adjusted score of the mental component of the SF-36 rose from 29.7 (95% CI: 28.0 - 31.4) at baseline to 36.6 (95% CI: 34.6 - 38.6) at 3 months and 38.7 (95% CI: 36.5 - 40.9) at 12 months.
No serious adverse effects were reported.

**Clinical conclusions**
The analysis demonstrated that both groups had similar effectiveness in reported alcohol consumption, alcohol dependence, alcohol-related problems and mental health of the clients.

**Measure of benefits used in the economic analysis**
The measure of benefit used was the quality-adjusted life-years (QALYs). These were assessed using the EQ-5D questionnaire that was completed by clients at baseline and at 3 and 12 months. The QALYs were calculated using UK population norms for the evaluation of health states and linear interpolation to identify the areas under the QALY curve. To ascribe values for missing data on health state values for a few responders, the authors carried forward their preceding health states.

**Direct costs**
The measurements of treatment costs and public sector resource use were fully reported. The treatment costs included the cost of training and supervision, including trainer and therapist time, space and materials used. The aggregated cost of training in therapy was divided by the number of sessions delivered for the UKATT trial. Also included were the costs of hospitalisation, a hospital day visit, a hospital outpatient visit, a general practitioner for home visit and in-surgery consultation, a prescription, a home visit by a community psychiatric nurse, a detoxification episode in primary care, rehabilitation and consultation in an alcohol agency, social service contact and court attendance (crown court and magistrates court).

The costs and the quantities were analysed separately for all cost components except those associated with training and the delivery of treatment. All the quantities of resources used were derived from primary data (UK alcohol treatment trial). All the costs were derived from sources published in different years. Although they were reported for the fiscal year 2000 to 2001, the method used to reflate the costs was not reported. Discounting was not relevant as the costs were incurred during a short time (less than 2 years).

**Statistical analysis of costs**
The authors conducted a bootstrap analysis to obtain more reliable CIs. They illustrated 1,000 artificial bootstrapped samples, each consisting of 608 observations that were chosen randomly with replacement from the actual sample of 608 clients with complete economic data. The sampling distribution of the cost-effectiveness ratio (cost per QALY gained) was derived from the 1,000 bootstrapped samples, and cost-effectiveness acceptability curves were constructed. The curves illustrated the resulting probability that one therapy is more effective than the other against the maximum cost that decision-makers are willing to pay for an additional QALY.

**Indirect Costs**
The indirect costs were not included in the analysis.

**Currency**
UK pounds sterling (£).

**Sensitivity analysis**
Three multi-way sensitivity analyses were conducted to test variability in the data. First, the training costs were divided over all 736 sessions (16 sessions a week for 46 weeks) that a typical therapist might deliver in a year instead of just the sessions therapists delivered in the UK alcohol treatment trial. Second, a worst- and best-case scenario of the salaries of all 52 therapists was tested by using the lower and higher quartiles of the therapist's annual salary. Third, the effect of treatment compliance was tested by replacing the number of sessions attended for one treatment by the 10th centile of
its distribution and the other treatment by the 90th centile of its distribution, and vice versa.

**Estimated benefits used in the economic analysis**
In the motivational therapy group, the mean EQ-5D score was 0.616 (standard deviation, SD=0.299) at baseline, 0.684 (SD=0.293) at 3 months and 0.671 (SD=0.311) at 12 months.

In the social network group, the mean EQ-5D score was 0.589 (SD=0.298) at baseline, 0.648 (SD=0.314) at 3 months and 0.626 (SD=0.324) at 12 months.

Incremental QALYs were reported. After adjusting for baseline differences in the analysis, the social network therapy group achieved 0.0113 QALYs less than the motivational group, but the difference was not statistically significant (bias corrected 95% CI: 0.0532 fewer to 0.0235 more).

**Cost results**
The treatment costs were reported per patient. The average treatment cost was 221 in the social behaviour and network therapy group and 129 in the motivational group. The difference (92, 95% CI: 69 - 113) was statistically significant.

After including the costs of the various health care resources used, social behaviour and network therapy achieved a mean net public sector saving of 206 per patient more than motivational enhancement therapy, but the difference was insignificant (95% CI: -454 - 818).

**Synthesis of costs and benefits**
An incremental analysis was performed. Motivational enhancement therapy had an incremental cost-effectiveness ratio of 18,230 (marginal cost of 206 divided by marginal utility gain of 0.0113 QALYs) in comparison with social therapy.

The bootstrap analysis demonstrated that motivational enhancement therapy was dominant in 19% of the bootstrapped samples, while social behaviour and network therapy was dominant in 23% of the bootstrapped samples.

Social therapy was less costly but also less effective in 514 samples, while social therapy was more effective but more costly than motivational therapy in the remaining 60 samples.

The cost-effectiveness acceptability curves for motivational enhancement therapy relative to social behaviour and network therapy demonstrated that the two therapies were equally cost-effective. If decision-makers are willing to pay nothing for an extra QALY gained then social therapy would be preferable to motivational therapy in 747 of the 1,000 samples (i.e. 514 samples where the health gains from motivational therapy have no value and 233 samples where social therapy dominates). If a cost of 100,000 per QALY is considered acceptable, then motivational therapy is preferable to social network therapy in 662 of the 1,000 samples. In the case where an additional QALY is valued at 30,000, motivational therapy has a 57.6% probability of being more cost-effective than social behaviour and network therapy.

**Authors' conclusions**
"The novel social behaviour and network therapy did not differ significantly in cost-effectiveness from the proved motivational enhancement therapy.”

**CRD COMMENTARY - Selection of comparators**
A justification was provided for the comparators used. While social behaviour and network therapy is a new treatment option, motivational enhancement is a treatment of proven effectiveness and was the most commonly used in the authors' setting. You should decide if this represents a valid health technology in your own setting.

**Validity of estimate of measure of effectiveness**
The analysis was based on a pragmatic randomised controlled trial (UKATT Research Team, 2005), which was
appropriate given the study question. One cannot be sure that the study sample was representative of the study population because a high number of clients refused to participate (42.1%) or were characterised as ineligible (23.7%). In addition, the patient groups were not shown to be comparable at analysis. These facts represent the main weaknesses of the effectiveness analysis. However, methods of randomisation, blinding, length of study and loss to follow-up were all reported, suggesting that the internal validity of the study is likely to be good. Appropriate statistical analyses were undertaken to account for potential biases and confounding factors. According to the power calculations performed, an appropriate sample size was used.

**Validity of estimate of measure of benefit**

The measure of benefit used was the health utility (QALYs) measured over 12 months using the EQ-5D questionnaire. This measure of benefit enables comparisons across health technologies.

**Validity of estimate of costs**

Although the perspective adopted was not explicitly stated, it was not societal since the indirect costs were not included in the economic analysis. The costs and the quantities were reported separately for most categories, apart from the costs of training therapists and their costs for delivering treatment, and overheads. This would not enable the analysis to be easily reworked for other settings. The quantities of resources used were derived from a single study, while the cost data were derived from published sources. Appropriate sensitivity analyses were conducted to test the robustness of the estimates used. Although the price year was reported, the method used to reflate the cost data was not described. Discounting was not relevant as the costs were incurred during one year.

**Other issues**

The authors compared their results with published studies and reported consistency in their findings. The issue of generalisability was not addressed. The authors do not appear to have presented their results selectively. The study enrolled people with alcohol problems aged over 16 years and this was reflected in the authors' conclusions. The authors reported several limitations to their study. For example, productivity losses and social costs (e.g. costs of alcohol related violence, burden of alcohol problems on family) were not included in the analysis. In particular, they could not tell whether effects on family or friends were increased or reduced by social behaviour and network therapy. In addition, the analysis had a short-term horizon and the long-term effects of reduced drinking on health were not taken into consideration.

**Implications of the study**

The authors suggested that as both treatment options appear to have been cost-effective and equally effective, they could be adopted into practice according to particular characteristics of local settings. The authors also planned to further explore the UK alcohol treatment trial data and, in particular, to investigate the types of patients who respond better to each therapy. The authors' discussion also highlighted areas where more information is needed.

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Other publications of related interest


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